

PROCEEDINGS
OF THE
AMERICAN SOCIETY
OF
CIVIL ENGINEERS

VOL. XXXVIII—No. 7



September, 1912

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PROCEEDINGS
OF THE
AMERICAN SOCIETY
OF
CIVIL ENGINEERS
(INSTITUTED 1852)

VOL. XXXVIII—No. 7
SEPTEMBER, 1912

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CONTENTS

Society Affairs.....	Pages 497 to 548.
Papers and Discussions.....	Pages 1015 to 1188.

NEW YORK 1912

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The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

HOUSE OF THE SOCIETY—220 WEST FIFTY-SEVENTH STREET, NEW YORK.

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed
in its publications.

SOCIETY AFFAIRS

CONTENTS

	PAGE
Minutes of Meetings:	
Of the Society, September 4th, 1912.....	497
Of the Board of Direction, September 3d, 1912.....	501
Announcements:	
Hours during which the Society House is open.....	502
Future Meetings.....	502
Sixth Congress of the International Association for Testing Materials.....	502
Searches in the Library.....	503
Papers and Discussions.....	503
Local Associations of Members of the American Society of Civil Engineers.....	504
Privileges of Engineering Societies Extended to Members.....	504
Accessions to the Library:	
Additions.....	507
By purchase.....	511
Membership (Additions, Changes of Address, Deaths).....	512
Recent Engineering Articles of Interest.....	520

MINUTES OF MEETINGS

OF THE SOCIETY

September 4th, 1912.—The meeting was called to order at 8.45 p. m.; A. L. Bowman, M. Am. Soc. C. E., in the chair; Chas Warren Hunt, Secretary; and present, also, 97 members and 22 guests.

The minutes of the meetings of May 15th and June 5th, 1912, and of the Annual Convention, were approved as printed in *Proceedings* for August, 1912.

A paper by Ernest McCullough, M. Am. Soc. C. E., entitled "Engineering Education in Its Relation to Training for Engineering Work," was presented by title by the Secretary, who also read communications on the subject by Messrs. N. B. Garver, George B. Pillsbury, F. H. Constant, and Arthur B. Green. The paper was discussed orally by Messrs. George F. Swain, William J. Boucher, A. H. Fuller, Walter Hinds Allen, C. H. Stengel, Chas. Warren Hunt, A. H. Blanchard, P. W. Henry, and J. C. L. Rogge.

The Secretary announced the election of the following candidates on September 3d, 1912:

AS MEMBERS

WILLIAM NELSON BROWN, Washington, D. C.
WILLIAM BECK GODDARD, Jr., Detroit, Mich.
ANDREW PHILIP HARTMANN, New York City
CHARLES HENRY HURD, Indianapolis, Ind.
GEORGE WEYMOUTH HUTCHINSON, Greensburg, Pa.
RAWLINS LOWNDES, Waterbury, Conn.
GEORGE BRUCE PALMER, Wyandotte, Mich.
WILLIAM WARR CASSIDY PERKINS, Niagara Falls, N. Y.
HAROLD EDWARD PLUMER, Buffalo, N. Y.
ROY LOFTIN RINEHART, St. Louis, Mo.
DAVID ROBERTSON, Boonton, N. J.
HERMAN HENRY SCHMIDT, Brooklyn, N. Y.
JOSEPH MANSFIELD SLATER, St. Louis, Mo.
ALBERT JOSEPH WISE, Houston, Tex.

AS ASSOCIATE MEMBERS

JOSEPH CHESTER ALLISON, Calxico, Cal.
JOHN TAYLOR CHAMBERS, New Orleans, La.
CHARLES IRVING COLYER, Montclair, N. J.
GEORGE LENOX CRAWFORD, Denver, Colo.
TRUE HERBERT FILES, Fairville, N. B., Canada
FRANK MCCLAREN FRIESELL, Honolulu, Hawaii
EUSEBIUS JULIUS HALSEMA, New Bremen, Ohio
JOHN ARTHUR JENSEN, Minneapolis, Minn.
DWIGHT B LA DU, Albany, N. Y.
AMEDEE LANGLOIS, Ottawa, Ont., Canada
EDWIN KIRK LARGE, Atlanta, Ga.
ALFRED RAYMOND LINDSEY, Philadelphia, Pa.
DANIEL FRANCIS MCCARTHY, St. Albans, Vt.
SAMUEL FRASER MCINTOSH, Southbridge, Mass.
CLARK ROGERS MANDIGO, Kansas City, Mo.
MATTHEW FRANCIS QUINN, New York City
LESTER MORSE SANFORD, Swissvale, Pa.
ASA NAND. SAWHNEY, Baramulla, Kashmir, India
FRANK CHARLES SCHROEDER, New York City
WALTER EALON STANDEVEN, Omaha, Nebr.
CHARLES WOLCOTT STARK, New York City
JOHN SIMEON SWAN, Helena, Mont.
HOWARD SMITH TAYLOR, Sault Ste. Marie, Ont., Canada
KARL OTTO TRUELL, Sydney, C. B., Canada

FRED BACON WALKER, Prescott, Ariz.
BENJAMIN THOMAS WESTON, Hale, Mich.
GEORGE GROVER WICKLINE, Dallas, Tex.
GEORGE SAMUEL YOUNG, Bend, Ore.

As JUNIORS

MANUEL ANTONIO CADENAS, Camaguey, Cuba
GEOFFREY ARTHUR CAFFALL, Pittsburgh, Pa.
HAROLD MARTIN DAVIS, Dorchester, Mass.
WALTER HETHERINGTON DUFEE, Wilkesburg, Pa.
GEORGE INNESS GAY, Berkeley, Cal.
GEORGE CHRISTIAN GUNDLACH, St. Louis, Mo.
HARRY KORNFELD, Keokuk, Iowa
SAMUEL MACELROY LOWREY, Baltimore, Md.
EDWIN ALLAN MACKRELL, Chapeau, Ont., Canada
RICARDO MONGES, New York City
ALBERT AUGUST LAMBERT ORT, Chicago, Ill.
FREDERIC STEVENS STOW, Westerly, R. I.
WILLIAM SIDNEY TOMLINSON, Columbia, S. C.
ROMNEY LEIGH VAUGHN, San Francisco, Cal.
FREDERIC NEWTON WILDISH, Lincoln, Nebr.

The Secretary announced the transfer of the following candidates on September 3d, 1912:

FROM ASSOCIATE MEMBER TO MEMBER

ROBERT JOHN HARDING, Poughkeepsie, N. Y.
GEORGE GILL HONNESS, Pleasantville, N. Y.
HAROLD WALTON HUDSON, Atlantic City, N. J.
FRANK BARR KNIGHT, Chicago, Ill.
ANDREW CAVITT LOVE, Franklin, Tex.
ALBERT ALLEN NORTHROP, Keokuk, Iowa
CHARLES EDWARD PARSONS, Boston, Mass.
GEORGE PUTNAM STOWITTS, New York City
CHARLES WOOD SUTTON, Lima, Peru
WILLIAM MCGEHEE WALLACE, Washington, D. C.

FROM ASSOCIATE TO MEMBER.

JAMES JOSEPH FERRIS, Jersey City, N. J.

FROM JUNIOR TO MEMBER

RICHARD ERWIN DOUGHERTY, White Plains, N. Y.

FROM ASSOCIATE TO ASSOCIATE MEMBER

JAMES VANCE HOWE, Jenkins, Ky.

FROM JUNIOR TO ASSOCIATE MEMBER

AUSTIN WILLMOTT EARL, San Diego, Cal.
JAMES AUGUSTINE GALVIN, Cohoes, N. Y.
JOHN WILLIAM GRAHAM, Cagayan, Philippine Islands
CLEMENT JOHN HOWARD, Houston, Tex.
RICHARD LEE LINDSAY, Roanoke, Va.
JAMES FRANCIS MURPHY, New York City
JAMES ROBINSON SCOTT, Jr., Denver, Colo.
CHARLES RANDOLPH SIMPSON, New York City
CHARLES WILLETT SPOONER, Ann Arbor, Mich.
GALE STANLEY STROUT, Berkeley, Cal.
FRANK CLIFTON TOLLES, Cincinnati, Ohio
HARRY COLLINS WALTON, New York City
THOMAS JUDSON WRIGHT, Jr., Charlotte, N. C.

The Secretary announced the following deaths:

ALFRED ELLSWORTH CARTER, elected Associate Member, June 4th, 1902; Member, April 4th, 1911; died June 11th, 1912.

JAMES EDMUND CHILDS, elected Member, December 4th, 1878; died July 16th, 1912.

JAMES KENNON GEDDES, elected Member, January 2d, 1890; died June 6th, 1912.

ARTHUR POWIS HERBERT, elected Member, September 5th, 1888; died June 16th, 1912.

JAMES BREADING HOGG, elected Member, October 3d, 1906; died June 4th, 1912.

HORACE E. HORTON, elected Member, September 6th, 1882; died July 29th, 1912.

EDWARD HENRY KEATING, elected Member, June 7th, 1882; died June 17th, 1912.

WILLIAM FREDERICK LOCKWOOD, elected Member, October 4th, 1910; died August 22d, 1912.

CHARLES JAMES MORSE, elected Member, February 6th, 1884; died December 6th, 1911.

ROBERT LELAND READ, elected Member, September 2d, 1874; died June 9th, 1912.

CECIL BRUNSWICK SMITH, elected Member, March 1st, 1905; died July 1st, 1912.

DONALD DEAN COLVIN, elected Associate Member, May 6th, 1908; died July 2d, 1912.

WALTER SCOTT HANNA, elected Junior, October 6th, 1903; Associate Member, June 5th, 1907; died July 4th, 1912.

JAMES DYNAN NEWTON, elected Associate, September 5th, 1911; died August 8th, 1912.

Adjourned

OF THE BOARD OF DIRECTION

(Abstract)

September 3d, 1912.—President Ockerson in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Belknap, Bush, Churchill, Endicott, Gerber, Kimball, Knap, Loomis, Loweth, Ridgway, Snow, Strobel, and Thomson.

Ballots for membership were canvassed, resulting in the election of 14 Members, 28 Associate Members, and 15 Juniors, and the transfer of 1 Junior to the grade of Member, and 13 Juniors to the grade of Associate Member.

Ten Associate Members were transferred to the grade of Member. One Associate was transferred to the grade of Member, and one Associate was transferred to the grade of Associate Member.

Applications were considered and other routine business transacted.

Adjourned.

ANNOUNCEMENTS

The House of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

October 2d, 1912.—8.30 P. M.—This will be a regular business meeting. Ballots on the proposed amendment of Article VII of the Constitution will be canvassed, and a paper by H. G. Burrowes, M. Am. Soc. C. E., entitled "The Sixth Avenue Subway of the Hudson and Manhattan Railroad," will be presented for discussion.

This paper was printed in *Proceedings* for August, 1912.

October 16th, 1912.—8.30 P. M.—Two papers will be presented for discussion at this meeting, as follows: "A Brief Description of a Modern Street Railway Track Construction," by A. C. Polk, Assoc. M. Am. Soc. C. E.; and "Construction of a High-Service Reservoir at Baltimore, Md.," by P. A. Beatty, M. Am. Soc. C. E.

These papers were printed in *Proceedings* for August, 1912.

November 6th, 1912.—8.30 P. M.—A regular business meeting will be held, and two papers will be presented for discussion, as follows: "The Flood of March 22d, 1912, at Pittsburgh, Pa.," by Kenneth C. Grant, Assoc. M. Am. Soc. C. E.; and "State and National Water Laws, with Detailed Statement of the Oregon System of Water Titles," by John H. Lewis, Assoc. M. Am. Soc. C. E.

Mr. Grant's paper was printed in *Proceedings* for August, 1912, and Mr. Lewis' paper is printed in this number of *Proceedings*.

November 20th, 1912.—8.30 P. M.—At this meeting two papers will be presented for discussion, as follows: "The Sewickley Cantilever Bridge Over the Ohio River," by A. W. Buel, M. Am. Soc. C. E.; and "Ports of the Pacific," by H. M. Chittenden, M. Am. Soc. C. E., assisted by A. O. Powell, M. Am. Soc. C. E.

These papers are printed in this number of *Proceedings*.

SIXTH CONGRESS OF THE
INTERNATIONAL ASSOCIATION FOR TESTING MATERIALS

The Foreign Delegates to this Congress (which was in session in New York City during the week beginning September 2d) and the ladies accompanying them, were entertained by the American Society of Civil Engineers at the Society House on the evening of Thursday, September 5th, 1912.

During the evening Alfred D. Flinn, M. Am. Soc. C. E., presented an address descriptive of the Engineering Activities of the City of New York, and in connection with the address showed many interesting lantern slides.

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that, if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

In reference to this work, the Appendices* to the Annual Reports of the Board of Direction for the years ending December 31st, 1906, and December 31st, 1910, contain summaries of all searches made to date.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion, will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which, from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to

* *Proceedings*, Vol. XXXIII, p. 20 (January, 1907); Vol. XXXVII, p. 28 (January, 1911).

be presented at meetings, but written discussions, only, will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Association

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Palace Hotel on the third Friday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 P. M. every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary of the Association, E. T. Thurston, Jr., M. Am. Soc. C. E., 713 Mechanics' Institute, 57 Post Street.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

Colorado Association

The meetings of the Colorado Association of Members of the American Society of Civil Engineers are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary, Gavin N. Houston, M. Am. Soc. C. E., 409 Equitable Building, Denver, Colo. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays, and, until further notice, will take place at the Colorado Traffic Club.

Visiting members are urged to attend the meetings and luncheons.

PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms and at all meetings:

American Institute of Mining Engineers, 29 West Thirty-ninth Street,
New York City.

American Society of Mechanical Engineers, 29 West Thirty-ninth
Street, New York City.

Architekten-Verein zu Berlin, Wilhelmstrasse 92, Berlin W. 66,
Germany.

- Associação dos Engenheiros Cíveis Portuguezes**, Lisbon, Portugal.
- Australasian Institute of Mining Engineers**, Melbourne, Victoria, Australia.
- Boston Society of Civil Engineers**, 715 Tremont Temple, Boston, Mass.
- Brooklyn Engineers' Club**, 117 Remsen Street, Brooklyn, N. Y.
- Canadian Society of Civil Engineers**, 413 Dorchester Street, West, Montreal, Que., Canada.
- Civil Engineers' Society of St. Paul**, St. Paul, Minn.
- Cleveland Engineering Society**, Chamber of Commerce Building, Cleveland, Ohio.
- Cleveland Institute of Engineers**, Middlesbrough, England.
- Dansk Ingeniorforening**, Amaliegade 38, Copenhagen, Denmark.
- Engineers' and Architects' Club of Louisville, Ky.**, 303 Norton Building, Fourth and Jefferson Streets, Louisville, Ky.
- Engineers' Club of Baltimore**, Baltimore, Md.
- Engineers' Club of Minneapolis**, 17 South Sixth Street, Minneapolis, Minn.
- Engineers' Club of Philadelphia**, 1317 Spruce Street, Philadelphia, Pa.
- Engineers' Club of St. Louis**, 3817 Olive Street, St. Louis, Mo.
- Engineers' Club of Toronto**, 96 King Street, West, Toronto, Ont., Canada.
- Engineers' Society of Northeastern Pennsylvania**, 302 Board of Trade Building, Scranton, Pa.
- Engineers' Society of Pennsylvania**, 219 Market Street, Harrisburg, Pa.
- Engineers' Society of Western Pennsylvania**, 2511 Oliver Building, Pittsburgh, Pa.
- Institute of Marine Engineers**, 58 Romford Road, Stratford, London, E., England.
- Institution of Engineers of the River Plate**, Buenos Aires, Argentine Republic.
- Institution of Naval Architects**, 5 Adelphi Terrace, London, W. C., England.
- Junior Institution of Engineers**, 39 Victoria Street, Westminster, S. W., London, England.
- Koninklijk Instituut van Ingenieurs**, The Hague, The Netherlands.
- Louisiana Engineering Society**, 321 Hibernia Bank Building, New Orleans, La.
- Memphis Engineering Society**, Memphis, Tenn.
- Midland Institute of Mining, Civil and Mechanical Engineers**, Sheffield, England.
- Montana Society of Engineers**, Butte, Mont.

North of England Institute of Mining and Mechanical Engineers,
Newcastle-upon-Tyne, England.

Oesterreichischer Ingenieur- und Architekten-Verein, Eschen-
bachgasse 9, Vienna, Austria.

Pacific Northwest Society of Engineers, 803 Central Building, Seat-
tle, Wash.

Rochester Engineering Society, Rochester, N. Y.

Sachsischer Ingenieur- und Architekten-Verein, Dresden, Germany.

Sociedad Colombiana de Ingenieros, Bogota, Colombia.

Sociedad de Ingenieros del Peru, Lima, Peru.

Societe des Ingenieurs Civils de France, 19 Rue Blanche, Paris,
France.

Society of Engineers, 17 Victoria Street, Westminster, S. W.,
London, England.

Svenska Teknologforeningen, Brunkebergstorg 18, Stockholm,
Sweden.

Tekniske Forening, Vestre Boulevard 18-1, Copenhagen, Denmark.

Western Society of Engineers, 1737 Monadnock Block, Chicago, Ill.

ACCESSIONS TO THE LIBRARY

(From August 2d to September 4th, 1912)

DONATIONS*

PRACTICAL DESCRIPTIVE GEOMETRY.

By William Griswold Smith. Cloth, 9 x 6 in., illus., 7 + 208 pp. New York and London, McGraw-Hill Book Company, 1912. \$2.00.

In offering this new textbook, the author's aim has been, it is stated, to present the subject in as simple a manner and as progressively as possible, by a thorough drill in fundamentals, repetitions of statements for emphasis, comprehensive notation, analyses separated from proofs, and a tabulated order of the operations in each analysis and instruction, reminding the student constantly of the relation between descriptive geometry and practical drawing. The author believes, it is stated, that a thorough knowledge of the subject can be achieved principally by working exercises, and he has therefore included, in the text, 860 exercises, of which about one-fourth are such as may be met in actual practice. These exercises are said to be of considerable variety and capable of infinite multiplication. Special subjects, such as Shades and Shadows, Perspective, etc., are given only brief treatment. The author has expanded the original seventeen "Point, Line and Plane" problems to forty-three, such expansion being justified, he believes, in order to cover the ground fully and to provide the necessary steps in the development of the subject. A new treatment of surfaces is also presented, in which more importance is given to plane sections, intersections, developments, and practical applications, and less to passing tangent planes, thirty exercises based on practical illustrations of the various warped surfaces, showing actual uses for all the listed varieties, being included. The Contents are: Definitions, Notations, Preliminary Theorems and Exercises; Problems Relating to Points, Lines and Planes; Curved Lines and Surfaces; Perspective and Isometric Projection; Index.

FREIGHT TERMINALS AND TRAINS

Including a Revision of Yards and Terminals. By John A. Droegge. Cloth, 9½ x 6½ in., illus., 7 + 465 pp. New York and London, McGraw-Hill Book Company, 1912. \$5.00.

This volume, the preface states, is practically a revised and enlarged edition of the author's "Yards and Terminals" which was published in 1906, the new title being necessary because of the fact that the new material exceeds the revised portions of the former book. The work is stated to be essentially a treatise on freight transportation in all its aspects, the subject having been treated from the viewpoint of the engineer who plans, builds, and maintains, and of the officers who operate the various plants. Detailed descriptions of many yards and terminals, and of their equipment, are also given, the author stating that as no two terminals are alike in their physical and traffic characteristics, every illustration of successful design or description of good operating methods will be of assistance to railroad men. The Contents are: The Terminal Problem; Terms and Definitions; General Requirements of Terminal Design; Track Construction and Maintenance Details; Classification Yards; Operation of Yards; The Yardmaster; Management and Discipline; Loading Cars; Making Up Trains; Time Freight Service; Team Delivery Yards; Live Stock Handling; Weighing Freight; Records and Statistics; Water Front Terminals; Coal Piers and Storage Plants; Ore and Lumber Docks; Grain Elevators, Freight Houses; British Freight Service; Transfer Stations; Mechanical Handling of Freight; The Freight Agent; Operation of Freight Houses; Refrigerating, Ventilating and Heating; The Engine House; Engine Coaling Plants; Ash and Sand Plants; The Engine House Foreman; Index.

HANDBOOK FOR HIGHWAY ENGINEERS.

Part I, Theory of Design; Part II, Practice of Design and Construction. By Wilson G. Harger, Assoc. M. Am. Soc. C. E., and Edmund A. Bonney. Leather, 7 x 4 in., illus., 14 + 493 pp. McGraw-Hill Book Company, New York and London, 1912. \$3.00.

In a secondary title, it is stated that this book contains information ordinarily used, in the field and in the office, in the design and construction of roads warranting an expenditure of from \$5 000 to \$30 000 per mile. The subject-matter has been compiled, it is said, to meet the requirements of both experienced and inexperienced road men, and the collection of cost data and the tables it is hoped will

*Unless otherwise specified, books in this list have been donated by the publishers.

prove especially useful to those engaged in road work. The Contents are: Part I, Theory of Design: Grades and Alignment; Sections: Premises of Design; Drainage: Culverts, Small-Span Bridges, Under Drainage: Foundations for Broken Stone Roads; Top Courses; Minor Points: Guard-Rail, Retaining Walls, Curbs; Materials. Part II, Practice of Design and Construction: The Survey: Office Practice: Mapping the Preliminary Survey, The Design, Miscellaneous Points; Cost Data and Estimates; Macadam Roads, Crushing, Brick Pavement on Country Roads; Notes on Construction; Specifications: Materials, Methods of Construction; Index.

THE MODERN LOCOMOTIVE.

By C. Edgar Allen. (The Cambridge Manuals of Science and Literature.) Cloth, 7 x 5 in., illus., 8 + 174 pp. Cambridge, The University Press; New York, G. P. Putnam's Sons, 1912. 50 cents. (Donated by G. P. Putnam's Sons.)

Not being intended for specialists, as stated in the preface, the subject-matter of this book covers only the general principles of the design and construction of a modern locomotive and the broad developments made in such work. Descriptions of the mechanical features of the locomotive have been omitted, as well as dimensions of various types of engines, more attention being given to such matters as combustion, heat transfer, steam production, etc., as being more essential to the proper understanding of the modern locomotive. The Chapter headings are: Introduction; Steam Generation; Combustion and Vaporization; Increasing the Useful Effect of the Boiler: Superheating, Thermal Storage, Feed Heating; Resistance, Tractive Effort, Adhesion; Utilization of the Steam; Frames and Running Gear; Stability; Performance and Speeds; Compounding; Bibliography; Index.

ELECTRICAL METERMAN'S HANDBOOK.

Written and Compiled by the Committee on Meters, National Electric Light Association. Cloth, 7 x 4½ in., illus., 6 + 1076 pp. New York, National Electric Light Association, 1912. \$3.00.

This Handbook, which was presented at the Thirty-fifth Annual Convention of the National Electric Light Association, held at Seattle, Wash., June 10th-13th, 1912, by a committee, consisting of Messrs. O. J. Bushnell, W. E. McCoy, W. H. Fellows, W. L. Wadsworth, and F. A. Vaughn, is stated to be largely a compilation of material on American electricity meter practice from authoritative sources. It was prepared, it is said, for the purpose of making available, in practical form and for men without technical education, a knowledge of meters and metering necessary for the accurate and efficient measurement of electricity used for commercial purposes. It is also intended for use in training men for meter work, and contains such instructions and data as every meterman should have constantly at hand for reference. The Contents are: The Meterman's Relation to Consumers; Terminology, Nomenclature, and Units; The Principles of Electricity Meters; The Measurement of Electrical Energy; Laboratory, Standards, and Instruments; Meter Shop; Watt-Hour Meter Testing; Watt-Hour Meter Testing Methods; Auxiliary Equipment for Testing Watt-Hour Meters in Service; Statistics of Watt-Hour Meter Tests; Watt-Hour Meter Records; Reading of Service Watt-Hour Meters; Investigation of Consumers' Complaints; Service Watt-Hour Meter Installation Devices; Watt-Hour Meter Constants and Test Formulas; Descriptive Data on Various Types of Watt-Hour Meters; Maximum Load Indicators; Summary of Specifications for Acceptance of Watt-Hour Meter Tests; Questions for Metermen; Index.

NEW YORK AIR BRAKE SYSTEM

With Questions and Answers. Cloth, 8½ x 5½ in., illus., 3 + 374 + 8 pp. Chicago, Frederick J. Drake & Co., 1911.

As many of the great trunk lines of railways have adopted and are using the New York Air Brake System, a study of this system, it is stated, will be of great benefit to railroad men. The information contained in this book, which was compiled and edited by Messrs. Calvin F. Swingle, Frederick J. Prior, Robert H. Blackall, W. W. Wood, Frank H. Dukessmith, W. G. Wallace, C. B. Conger, and The Locomotive Firemen and Enginemen's Magazine, is stated to be strictly up to date, and includes detailed explanations and descriptions of the principles governing the construction and operation of the system, together with all the parts and their various functions. In addition a complete course in catechetical instruction is given in all matters connected with the construction, care, and operation of the modern air brake, the principles of train handling, both freight and passenger, and of brake leverage and brake power, especially, being clearly and fully explained. A partial list of Chapter headings is as follows: The Duplex Air Pump (all sizes); Engineer's Brake Valves; B-3 Equipment, Accelerator Valve; L Automatic Brake Valve; Duplex and Triplex Pump Governors; The J Triple, K Triple, and Quick Action Triple; Automatic Brake Valve; Automatic Control; etc., etc.

ILLUMINATION: ITS DISTRIBUTION AND MEASUREMENT.

By Alexander Pelham Trotter. Cloth, 9 x 6 in., illus., 17 + 292 pp. London, Macmillan and Co., Limited, 1911. \$2.75.

In May, 1892, the author presented a paper on this subject before the Institution of Civil Engineers, for which he received a Telford Medal and a Telford premium. Sixteen years later that paper was rewritten and published in *The Illuminating Engineer*, and revised and enlarged is now offered in its present form. The work is intended, it is stated, to advance the subject of illuminating engineering. Its scope is said to be limited to the principles and methods of the distribution and measurement of illumination, descriptions of systems of lighting, various kinds of lamps, etc., being purposely omitted. The first four chapters deal with the primary and the derived units of light, the theory of distribution of illumination, and the application of that theory to the opening and height of lamps. Chapters V to IX, inclusive, contain descriptions of instruments and methods used for measuring light and illumination; and the last part of the book is devoted to practical examples of the measurements of illumination, tables, bibliography, etc. The Chapter headings are: Units and Standards of Candle-Power; Illumination and Derived Units; The Distribution of Illumination; Distribution of Illumination Over a Plane; Photometers; Accessory Apparatus; Distribution of Light from a Source; The Photometry of Colored Lights; Errors; The Measurement of Illumination; Practical Examples of Measurements of Illumination; Dioptric Distribution and Diffusion of Light; Appendix; Bibliography; Index.

AN UNSINKABLE TITANIC

Every Ship Its Own Lifeboat. By J. Bernard Walker. Cloth, 7½ x 5½ in., illus., 11 + 185 pp. New York, Dodd, Mead and Company, 1912. \$1.00.

In their eagerness to make ocean liners fast and luxurious, the designers, the author states, have forgotten to make them safe and unsinkable, and, in this book, he shows how this can be done by adding to the modern steamship, as exemplified by the *Titanic*, the double skin, the longitudinal bulkhead, and the watertight deck used in the construction of the *Great Eastern* fifty years ago, and in the modern warship. The Contents are: Introductory; The Ever-Present Dangers of the Sea; Every Ship Its Own Lifeboat; Safety Lies in Subdivision; The Unsinkable *Great Eastern* of 1858; The Sinkable *Titanic*; How the Great Ship Went Down; Warship Protection Against Ram, Mine, and Torpedo; Warship Protection as Applied to Some Ocean Liners; Conclusions.

THE WESTINGHOUSE AIR BRAKE SYSTEM

With Questions and Answers. Cloth, 8½ x 5½ in., illus., 3 + 472 + 4 pp. Chicago, Frederick J. Drake & Co., 1911. \$2.00.

This work compiled and edited by Messrs. Calvin F. Swingle, Walter V. Turner, Frederick J. Prior, L. M. Carlton, Robert H. Blackall, W. W. Wood, Frank H. Dukessmith, W. G. Wallace, C. B. Conger, and The Locomotive Firemen and Engineers' Magazine, is stated to be a complete and up-to-date treatise containing detailed descriptions and explanations of all the various parts of the Westinghouse air brake, including not only the older forms, but also all the very latest improvements and appliances connected with it. In addition to the descriptive matter, there is a large amount of catechetical instruction covering every detail connected with the construction, care, and operation of the modern air brake, which should be valuable to railroad men. A partial list of the Contents is as follows: The 8½-Inch Cross-Compound Air Pump; No. 6 E. T. Equipment; High Pressure Control Schedule U; The K Triple, L Triple, and L N Equipment; Combined Automatic and Straight Air Brake; The 1¼-Inch Pump Governor; etc., etc.

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The Art of Illumination. By Louis Bell. Second Edition, Revised and Enlarged. McGraw-Hill Book Company, New York and London, 1912.

Forney's Catechism of the Locomotive. By George L. Fowler. Third Edition, Revised and Enlarged. 2 Vol. The Railway Age Gazette, New York, 1911.

Concrete and Stucco Houses: The Use of Plastic Materials in the Building of Country and Suburban Houses in a Manner to Insure the Qualities of Fitness, Durability and Beauty. By Oswald C. Hering. McBride, Nast & Company, New York, 1912.

Poor's Manual of the Railroads of the United States, Street Railway and Traction Companies, Industrial and Other Corporations, and Statements of the Debts of the United States, the Several States, Municipalities, etc. Forty-fifth Annual Number, 1912. Poor's Railroad Manual Co., New York and London.

Mitteilungen über Forschungsarbeiten auf dem Gebiete des Ingenieurwesens, insbesondere aus den Laboratorien der technischen Hochschulen. Herausgegeben vom Verein deutscher Ingenieure. Hefte 118-119. Julius Springer, Berlin, 1911.

Gray's Aero View of the Panama Canal. C. P. Gray, New York, 1912.

The Naval Pocket-Book: Founded by Sir W. Laird Clowes. Edited by R. C. Anderson. W. Thacker & Co., London; Thacker, Spink & Co., Calcutta and Simla, 1912.

The Progress of Physics, 1875-1908: Four Lectures Delivered to the University of Calcutta during March, 1908. By Arthur Schuster. Cambridge, The University Press, 1911.

Chemical Arithmetic and Calculation of Furnace Charges. By Regis Chauvenet. J. B. Lippincott Co., Philadelphia and London, 1912.

Proceedings of the International Association for Testing Materials: Vol. 2, Nos. 9-10. Vienna, June, 1912.

Forscherarbeiten auf dem Gebiete des Eisenbetons: Beiträge zur Theorie kontinuierlicher Eisenbetonkonstruktionen. Von A. Strassner. Heft 18. Wilhelm Ernst & Sohn, Berlin, 1912.

The Steam Engine and Turbine: A Text-Book for Engineering Colleges. By Robert C. H. Heck. D. Van Nostrand Co., New York, 1911.

The Mineral Industry: Its Statistics, Technology, and Trade during 1911. Edited by Charles Of. McGraw-Hill Book Company, New York, 1912.

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DEATHS

- HORTON, HORACE E. Elected Member, September 6th, 1882; died July 29th, 1912.
 LOCKWOOD, WILLIAM FREDERICK. Elected Member, October 4th, 1910; died August 28th, 1912.
 NEWTON, JAMES DYNAN. Elected Associate, September 5th, 1911; died August 8th, 1912.

Total Membership of the Society, September 5th, 1912,
 6 623

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(August 2d to September 5th, 1912)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- (1) *Journal*, Assoc. Eng. Soc., Boston, Mass., 30c.
- (2) *Proceedings*, Engrs. Club of Phila., Philadelphia, Pa.
- (3) *Journal*, Franklin Inst., Philadelphia, Pa., 50c.
- (4) *Journal*, Western Soc. of Engrs., Chicago, Ill., 50c.
- (5) *Transactions*, Can. Soc. C. E., Montreal, Que., Canada.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Gesundheits Ingenieur*, München, Germany.
- (8) *Stevens Institute Indicator*, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 25c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 25c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *The Engineering Record*, New York City, 10c.
- (15) *Railway Age Gazette*, New York City, 15c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Electric Railway Journal*, New York City, 10c.
- (18) *Railway and Engineering Review*, Chicago, Ill., 15c.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 20c.
- (21) *Railway Engineer*, London, England, 1s. 2d.
- (22) *Iron and Coal Trades Review*, London, England, 6d.
- (23) *Bulletin*, American Iron and Steel Assoc., Philadelphia, Pa.
- (24) *American Gas Light Journal*, New York City, 10c.
- (25) *American Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England, 4d.
- (27) *Electrical World*, New York City, 10c.
- (28) *Journal*, New England Water-Works Assoc., Boston, Mass., \$1.
- (29) *Journal*, Royal Society of Arts, London, England, 6d.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium, 4 fr.
- (31) *Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand*, Brussels, Belgium, 4 fr.
- (32) *Mémoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France, 1 fr.
- (34) *Portefeuille Economiques des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *Cornell Civil Engineer*, Ithaca, N. Y.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Technisches Gemeindeblatt*, Berlin, Germany, 0,70 m.
- (40) *Zentralblatt der Bauverwaltung*, Berlin, Germany, 60 pf.
- (41) *Elektrotechnische Zeitschrift*, Berlin, Germany.
- (42) *Proceedings*, Am. Inst. Elec. Engrs., New York City, \$1.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal*, Military Service Institution, Governors Island, New York Harbor, 50c.
- (45) *Mines and Minerals*, Scranton, Pa., 25c.
- (46) *Scientific American*, New York City, 15c.
- (47) *Mechanical Engineer*, Manchester, England, 3d.
- (48) *Zeitschrift, Verein Deutscher Ingenieure*, Berlin, Germany, 1,60 m.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Düsseldorf, Germany.
- (51) *Deutsche Bauzeitung*, Berlin, Germany.
- (52) *Rigasche Industrie-Zeitung*, Riga, Russia, 25 kop.
- (53) *Zeitschrift, Oesterreichischer Ingenieur und Architekten Verein*, Vienna, Austria, 70 h.

- (54) *Transactions*, Am. Soc. C. E., New York City, \$4.
 (55) *Transactions*, Am. Soc. M. E., New York City, \$10.
 (56) *Transactions*, Am. Inst. Min. Engrs., New York City, \$6.
 (57) *Colliery Guardian*, London, England, 5d.
 (58) *Proceedings*, Engrs.' Soc. W. Pa., 803 Fulton Bldg., Pittsburgh, Pa., 50c.
 (59) *Proceedings*, American Water Works Assoc., Troy, N. Y.
 (60) *Municipal Engineering*, Indianapolis, Ind., 25c.
 (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
 (62) *Industrial World*, 59 Ninth St., Pittsburgh, Pa., 10c.
 (63) *Minutes of Proceedings*, Inst. C. E., London, England.
 (64) *Power*, New York City, 5c.
 (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
 (66) *Journal of Gas Lighting*, London, England, 6d.
 (67) *Cement and Engineering News*, Chicago, Ill., 25c.
 (68) *Mining Journal*, London, England, 6d.
 (69) *Der Eisenbau*, Leipzig, Germany.
 (70) *Engineering Review*, New York City, 10c.
 (71) *Journal*, Iron and Steel Inst., London, England.
 (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
 (73) *Electrician*, London, England, 18c.
 (74) *Transactions*, Inst. of Min. and Metal., London, England.
 (75) *Proceedings*, Inst. of Mech. Engrs., London, England.
 (76) *Brick*, Chicago, Ill., 10c.
 (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.
 (78) *Beton und Eisen*, Vienna, Austria, 1.50 m.
 (79) *Forscheraarbeiten*, Vienna, Austria.
 (80) *Tonindustrie Zeitung*, Berlin, Germany.
 (81) *Zeitschrift für Architektur und Ingenieurwesen*, Wiesbaden, Germany.
 (83) *Progressive Age*, New York City, 15c.
 (84) *Le Ciment*, Paris, France.
 (85) *Proceedings*, Am. Ry. Eng. Assoc., Chicago, Ill.
 (86) *Engineering-Contracting*, Chicago, Ill., 10c.
 (87) *Railway Engineering and Maintenance of Way*, Chicago, Ill., 10c.
 (88) *Bulletin of the International Ry. Congress Assoc.*, Brussels, Belgium.
 (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.
 (90) *Transactions*, Inst. of Naval Archts., London, England.
 (91) *Transactions*, Soc. Naval Archts. and Marine Engrs., New York City.
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.
 (94) *The Boiler Maker*, New York City, 10c.
 (95) *International Marine Engineering*, New York City, 20c.
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.
 (98) *Journal*, Engrs. Soc. Pa., Harrisburg, Pa., 30c.
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.
 (101) *Metal Worker*, New York City, 10c.
 (102) *Organ für die Fortschritte des Eisenbahnwesens*, Wiesbaden, Germany.
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.
 (104) *The Surveyor and Municipal and County Engineer*, London, England, 6d.
 (105) *Metallurgical and Chemical Engineering*, New York City, 25c.
 (106) *Transactions*, Inst. of Mining Engrs., London, England, 6s.
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.
 (108) *Southern Machinery*, Atlanta, Ga., 10c.

LIST OF ARTICLES

Bridges.

- Æsthetics in Bridge Design.** C. R. Young. (5) Jan., 1911.
*Construction of the Galveston Causeway; Details of the Building of the Steam and Electric Railway and Highway Connection from the Island to the Mainland.** (15) Aug. 2.
*The Yoshida Concrete Bridge.** (14) Aug. 3.
Experiments on Concrete Water Barrels as Applied to Fire Protection of Railway Bridges. Hunter M'Donald. (Abstract of paper read before the Eng. Assoc. of the South.) (96) Aug. 8.
Concrete v. Brick and Steel for Bridges. (12) Aug. 9.
Waterproofing Glider Bridges Having Ballasted Steel Floors. (14) Aug. 10.
*The Conneaut Harbor Four-Track Drawbridge.** (14) Aug. 17.
Maximum Moments at 2-Ft. Intervals under Class E-50 Loading. George L. Jensen. (13) Aug. 22.

*Illustrated.



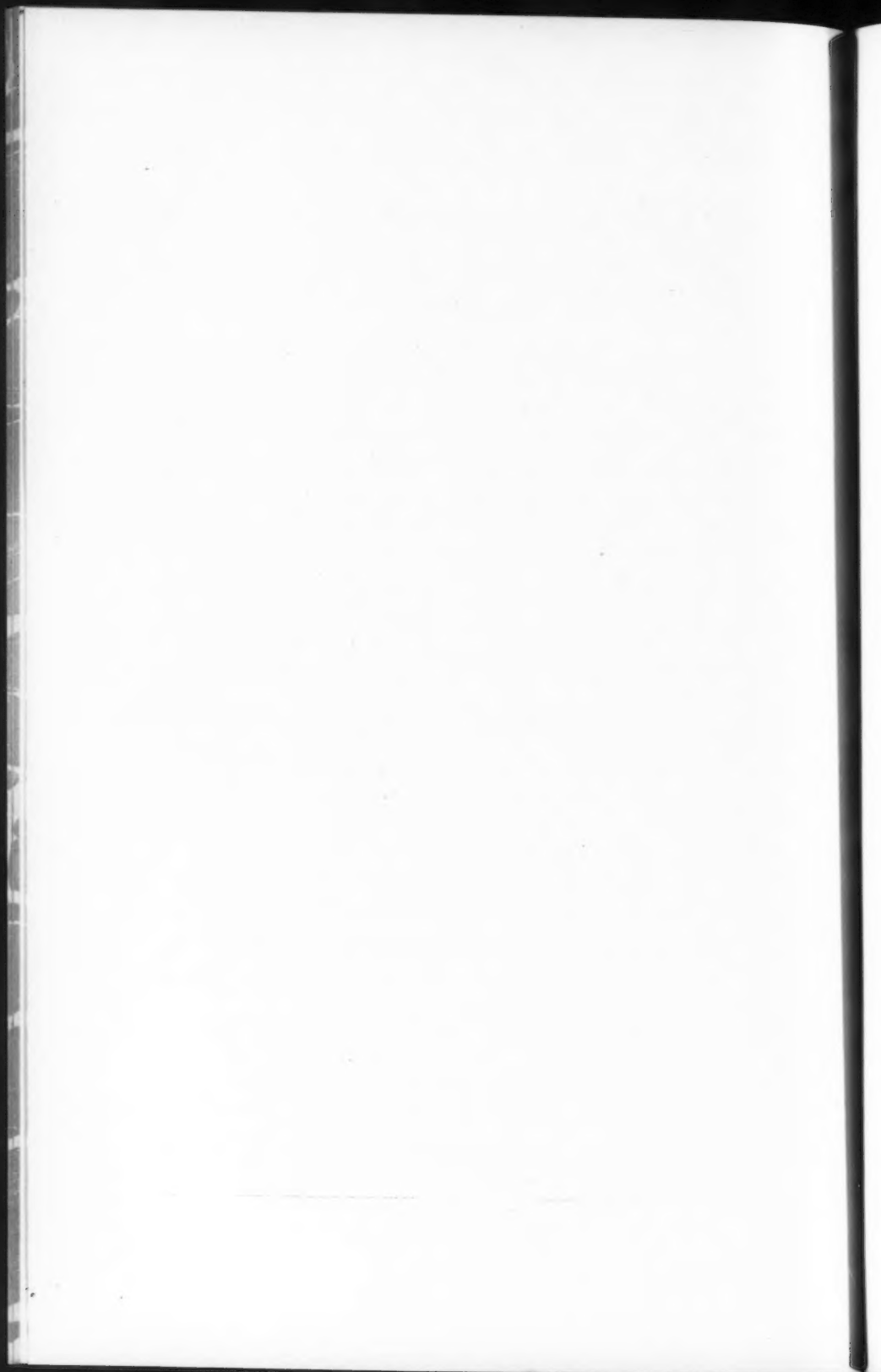
Bridges—(Continued).

- Erection of Willamette River Bridge; Oregon-Washington Structure Having Two Decks, Railway and Highway, and Three Piers, Cost \$1 715 000.* (15) Aug. 30.
- Erecting an 84-Ton Girder with a Gin Pole. (14) Aug. 31.
- Ueber die Grösse des Menschengedränges auf Brücken. Dr. Bohny. (40) June 15.
- Der beiderseits eingespannte Fachwerkbogen.* Kirchhoff. (40) July 3.
- Die Eisenbahnbrücke über den Südrarm des Sanagastromes im Zuge der Kameruner Mittellandbahn.* Baltzer. (40) July 27.

Electrical.

- Hydro-Electric Power Development of the British Canadian Power Company.* N. R. Gibson, S. M. Waldron and A. L. Mudge. (5) Jan., 1911.
- The Operation, Construction, Application, and Characteristics of Induction Motors.* A. Miller Gray. (5) Jan., 1911.
- The Development of Efficiency in High Tension Transmission Insulators.* A. O. Austin. (5) Jan., 1911.
- The Municipal Hydro-Electric Works of the City of Winnipeg at Point du Bois Falls. W. G. Chace. (5) Jan., 1911.
- The Illinois Traction System.* Fred H. Williams. (5) Oct., 1911.
- The Southern Power Company's Transmission Lines.* J. W. Fraser. (5) Oct., 1911.
- Electrical Resistance of Iron Alloys.* C. F. Burgess and J. Aston. (Abstract of paper read before Am. Electrochemical Soc.) (73) July 26.
- Calculation of the Reluctance of Armature Teeth. David Robertson. (73) July 26.
- A Simple Grouping for the Electrolytic Rectification of Alternating Currents of any Number of Phases. G. E. Bairsto. (73) July 26.
- The Winnipeg Hydro-Electric Power Station.* (11) Serial beginning July 26.
- Rotherham Electric Light, Power and Tramways Undertaking.* (26) July 26.
- Installation of Industrial Lighting Systems.* C. E. Caldwell. (108) Aug.
- Recent Developments in the Electrical Art. Elihu Thomson. (3) Aug.
- Low-Frequency Circuit in Spark Telegraphy.* L. B. Turner. (73) Aug. 2.
- A Small Rural Hydro-Electric Scheme in France.* (26)* Aug. 2.
- Changing the Size of Wire on Shunt Coils. Alan M. Bennett. (27) Aug. 3.
- Erection of Transmission Lines for the Utah Light & Railway Company.* L. J. Ritter. (27) Aug. 3.
- Electric Farming near Dayton, Ohio.* (27) Aug. 3.
- Canadian Hydroelectric Developments: Low-Head Generating Station of the Canadian Light & Power Company on the Beauharnois Canal at St. Timothee, Quebec.* (27) Aug. 3.
- New York Edison Company Secures 30 000 Kw. Railway Load.* (27) Aug. 3.
- Inspecting and Testing Electrical Apparatus.* A. L. Cook. (64) Serial beginning Aug. 6.
- Deptford Generating Station of the London Electric Supply Corporation, Ltd.* (26) Aug. 9; (12) Aug. 9; (73) Aug. 9.
- An Investigation of Transmission-Line Phenomena by Means of Hyperbolic Functions.* A. E. Kennelly. (27) Aug. 10.
- Propagation of Electric Energy by Standing and Traveling Waves.* John F. H. Douglas. (27) Aug. 10.
- Installing Central-Station Service in a Dyeing Plant (Costs). (27) Aug. 10.
- Auxiliary Electric Service at Rome.* (27) Aug. 10.
- The Hydroelectric Station at the Wachusett Dam. (14) Aug. 10.
- Graphical Calculations for the Design of Lighting Systems.* R. F. Pierce. (83) Aug. 15.
- Belgian High-Tension Testing Laboratories.* Alfred Gradenwitz. (26) Aug. 16.
- Emergency Lighting in Theatres and Other Buildings.* John D. Mackenzie. (73) Aug. 16.
- On the Conduction of Electricity at Contacts of Dissimilar Bodies.* R. H. Goddard. (73) Aug. 16.
- Welding by Electricity.* (19) Aug. 17.
- Enlargement of Texas Central Station (El Paso).* (27) Aug. 17.
- High-Potential Cable Testing at Boston.* (27) Aug. 17.
- The Tuillière Generating Station.* (73) Aug. 23.
- The Leakage Coefficients of Interpoles.* L. A. Doggett. (73) Aug. 23.
- The Strength of Concrete Poles. (14) Aug. 24.
- Pennsylvania Water & Power Company; Hydro-Electric Generating Station on the Susquehanna River and Terminal Station at Baltimore, Md.* (27) Aug. 24.
- The Use of Naked Aluminum Wire in Electromagnets.* H. F. Stratton. (27) Aug. 24.
- Conduit Systems in Concrete Buildings.* J. P. Morrissey. (27) Aug. 24.
- Development of the Seattle Municipal Electricity Supply System. (13) Aug. 29.
- The Overhead Plant of a Modern Telephone System.* Sergius P. Grace. (Paper read before the Philadelphia Telephone Soc.) (96) Serial beginning Aug. 29.

*Illustrated.



Electrical—(Continued).

- Development on East Canada Creek.* (27) Aug. 31.
 Electrical Apparatus for Measuring Power.* Charles R. Moore. (27) Aug. 31.
 The Fractional Distillation of Wood Tar by Electrical Heat.* H. K. Benson. (105) Sept.
 The Modern Dry Cell, Its Development, Construction and Manufacture.* H. K. Richardson. (105) Sept.
 Le Calcul des Conditions de Pose des Lignes Electriques Aériennes.* (33) July 20.
 Die Elektrotechnische Fabrik von Robert Bosch in Stuttgart.* Alfred Widmaier. (48) June 22.
 Beitrag zum Entwicklungsstand neuzeitlicher Elektroöfen.* W. Kunze. (50) Serial beginning July 4.
 Das Schalten grosser Gleichstrommotoren ohne Vorschaltwiderstände. Carl Trettin. (41) Serial beginning July 25.
 Günstigste Beanspruchung und zulässige Lichtabnahme von Glühlampen. L. Bloch. (41) Aug. 1.
 Verlegung von Unterwasserkabeln im Hamburger Hafen.* O. Wundram. (41) Aug. 8.

Marine.

- Deckloads of Timber. Arthur R. Liddell. (12) July 26.
 The Admiralty 32 000-Ton Floating Dock.* (11) Aug. 2.
 The Titanic Inquiry.* (11) Aug. 2; (13) Aug. 15.
 Electro-Hydraulic Power for Steering Vessels.* (26) Aug. 9.
 Feathering Paddle Wheels for U. S. Self-Propelling Hydraulic Dredges.* (13) Aug. 15.
 The Canadian Floating Ship Dock *Duke of Connaught*.* (11) Aug. 16.
 Electric Propulsion of the United States Collier *Jupiter*.* (11) Aug. 23; (27) Aug. 3.
 Wireless Telegraphy and Searchlights for Ensuring Safety at Sea. (26) Aug. 23.
 Steel versus Creosoted Wood for River Barges. A. E. Hageboeck. (Abstract of paper read before the Am. Wood Preservers Assoc.) (13) Aug. 29.
 World's Largest Bulk Freighters Built on the Great Lakes.* (95) Sept.
 The New Floating Dry-Docks for the British Admiralty.* Frederick C. Coleman. (95) Sept.
 Performance of Notable Sea-Going Diesel Engined Vessels.* F. Muller Van Brakel. (95) Sept.
 Les Torpilleurs et les Contre-Torpilleurs.* M. Laubeuf. (32) May.
 L'Emploi du Moteur Diesel à la Propulsion des Navires de Haute Mer.* O. H. Wildt. (33) July 20.
 Le Kangaroo Navire pour le Transport des Sous-Marins.* Marcel Hegelbacher. (33) July 27.
 Schwimmende Fahrzeuge aus Eisenbeton.* Perrey. (39) July 5.
 Untersuchung der gerissenen Stirnwand eines Schiffskessels.* E. Heyn and O. Bauer. (Report of the Königl. Materialprüfungsamt zu Gross-Lichterfelde-W.) (50) July 18.

Mechanical.

- Recent Advances in Tool Construction.* Alex. Bertram. (51) Jan., 1911.
 Interference with Involute Teeth.* E. A. Vessey and J. A. Seager. (108) June.
 Safeguards for Woodworking Machinery.* Edward K. Hammond. (108) June.
 Coal Smoke and Its Practical Abatement. J. M. Searle. (58) July.
 Recovery of Ammonia from Crude Gases. (66) July 23.
 A Universal Torsion Meter.* (12) July 26.
 "Closed Circuit" Air Transmission for a Gas-Engined Vessel.* (12) July 26.
 Oxide of Iron Purification in Sulphate of Ammonia Works. (66) July 30.
 Power Consumption of Hoisting Plants.* S. W. Sykes. (45) Aug.
 The Muller By-Product Coke Oven.* Eugene B. Wilson. (Paper read before the Coal Min. Inst. of Amer.) (45) Aug.
 The Value of Sawmill Refuse as Fuel in Gas Producers. (1) Aug.
 Ore Loading on the Island of Elba.* (45) Aug.
 The Use of Gas for Heat and Power; the Testing of Gas. Edward B. Rosa. (3) Aug.
 Gas as an Illuminant. Van Rensselaer Lansnigh. (3) Aug.
 The Works of the Bethlehem Steel Co.* (12) Aug. 2.
 The Use of Power Gas for Heating Purposes. D. R. Wilson. (47) Aug. 2.
 Motor Trucks and Trailers for Hauling Broken Stone. (14) Aug. 3.
 Installation of Small Power Plants in Federal Office Buildings. D. F. Atkins and H. M. Price. (27) Serial beginning August 3.
 Motor-Operated Roll Lathes.* E. M. Wise. (62) Aug. 5.
 Gas Power with and without Ammonia Recovery (Costs). Thomas Morgan. (24) Aug. 5.
 Surface Combustion.* H. C. Blackwell. (Paper read before the Iowa District Gas Assoc.) (24) Aug. 5.

*Illustrated.



Mechanical—(Continued).

- Boilers with and without Conveyors.* Henry J. Edsall. (64) Aug. 6.
 New Bridge Shops at Gary, Ind.* (13) Aug. 8.
 A New Line of Blowers Designed for Turbine Drive.* (96) Aug. 8.
 Superheated Steam—Its Effect upon Power in the Cylinder.* Charles R. King. (12) Aug. 9.
 The Testing of Moulding Sands. Alfred B. Searle. (Abstract of paper read before the British Foundrymen's Assoc.) (47) Aug. 9.
 Oxidation and Distillation of Coal Dust. J. Taffanel, G. Le Floch and A. Durr. (57) Aug. 9.
 The War Office Aeroplane Competition.* (11) Aug. 9.
 American Earthwork Machinery.* (12) Serial beginning Aug. 9.
 A Gravel Washing and Crushing Plant of Large Capacity.* (14) Aug. 10.
 At a Salt Works Power Plant. E. J. Saxe. (64) Aug. 13.
 Why Kiln Construction is Important. Ellis Lovejoy. (76) Aug. 15.
 New Four-Spindle Boring Machine.* (20) Aug. 15.
 The Result of a Motor Truck Experiment: How Commercial Vehicles Successfully Adopted to Replace a Railroad Service Developed into Suburban Freight and Express Carriers.* (20) Aug. 15.
 Power Consumed in Driving Looms. J. Gorton. (From *Journal*, Municipal School of Technology.) (47) Aug. 16.
 Boiler Economics and the Use of High Gas Speeds.* J. T. Nicolson. (Paper read before the Inst. of Engrs. and Shipbuilders in Scotland.) (47) Aug. 16.
 Removal of Waste Materials by Fans. F. R. Still. (Abstract of paper read before the Am. Soc. of Heating and Ventilating Engrs.) (47) Aug. 16.
 Pattern-Making.* T. R. Schofield. (Abstract of paper read before the British Foundrymen's Assoc.) (47) Aug. 16.
 Squeezing Gasoline out of Natural Gas; a Fuel Destined to Compete with Refinery Gasoline.* Frank P. Peterson. (46) Aug. 17.
 New Smoke Prevention Ordinance for the City of Pittsburgh. (62) Aug. 19.
 A New Steam Turbine with Velocity Stages.* (62) Aug. 19.
 Distortion of Indicator Drum Motion.* Julian C. Smallwood. (64) Aug. 20.
 A New Small Steam Turbine.* (20) Aug. 22.
 The Use of the Camera in Industrial Plants.* (20) Aug. 22.
 Structural and Boiler Steel Specifications.* (20) Aug. 22.
 A Vacuum Steam Trap.* (22) Aug. 23.
 An Exhaust Gas Turbine.* (12) Aug. 23.
 Deterioration and Spontaneous Heating of Coal in Storage. Horace G. Porter and F. K. Ovlitz. (Abstract of Preliminary Report to U. S. Bureau of Mines.) (12) Aug. 23; (57) Aug. 23; (22) Aug. 23.
 Compound Steam Engines. Peter S. Caldwell. (Paper read before Western Branch, Scottish Federated Inst. of Min. Students.) (22) Aug. 23.
 The Kros Regenerative Coke Oven.* Alfred Goblet. (22) Aug. 23.
 High-Pressure Incandescent Gas Lighting.* (19) Aug. 24.
 The Construction and Operation of a Modern Water Gas Works in a Small Town. R. K. Runner. (Paper read before the Iowa District Gas Assoc.) (24) Aug. 26.
 Blast Furnaces as Gas Producers. S. L. Goodale. (62) Aug. 26.
 Jersey City High School Power Plant.* Warren O. Rogers. (64) Aug. 27.
 Crushing Plant for the Construction of the Kensico Dam: A 500 cu.-yd. per Hour Plant for a Dam Containing 10 000 000 cu. yd. of Masonry.* Samuel W. Traylor. (86) Aug. 28.
 Blast Furnace Gas Engine Plant of 60 000 hp.* C. A. Tupper. (20) Aug. 29.
 A New Pennsylvania Railroad Power Plant: The Only Ore Handling Plant on the Lakes using Steam Turbines for Power.* (20) Aug. 29.
 An 84-In. Sawing Machine.* (20) Aug. 29.
 Production of Gasoline from Natural Gas.* C. F. Hirschfeld. (9) Sept.
 The Relation between Temperature and Viscosity of Lubricants; the Ellis-Elebash Temperature, Viscosity Law.* R. L. Ellis. (105) Sept.
 The Bronder System of Gaseous Heating for Use on Domestic Account. (24) Sept. 2.
 Gas Compression by Steam Power. H. D. Hildebrand. (Paper read before the Natural Gas Assoc. of Am.) (83) Sept. 2.
 Power Plant of the *Kansas City Star*.* (64) Sept. 3.
 Impulse and Reaction Turbines.* F. R. Low. (64) Sept. 3.
 Missouri River Power Station.* A. R. Maujer. (64) Sept. 3.
 Bridgeport Screw Company's New Factory.* (20) Sept. 5.
 New Cutting and Welding Process.* (20) Sept. 5.
 Typical American Uses of Cast Iron. John Jermain Porter. (Paper read before Inter. Assoc. for Testing Materials.) (20) Sept. 5.
 La Combustibilité des Combustibles Gazeux.* A. Grebel. (33) July 27.
 Le Travail Mécanique de la Pierre dans l'Industrie.* Jean Escard. (37) Serial beginning July 31.
 Quelques Essais Spéciaux sur les Voitures Automobiles.* Boyer-Guillon. (37) July 31.

*Illustrated.



Mechanical—(Continued).

- L'Epreuve d'Endurance Militaire des Véhicules de Poids Lourds. (1^{er}-31 juillet 1912).* (33) Aug. 3.
 Régulateur de Turbines Hydrauliques à Commande Indirecte, Système Briegleb et Hansen.* (33) Aug. 17.
 Die neue Bauart des Niclausse-Kessels.* F. Geiseler. (48) May 18.
 Versuche mit überlappt geschweissten Kesselblechen. Peter Zwiauer. (48) June 1.
 Untersuchung des Arbeitsprozesses eines Zweitaktmotors.* H. Scheit and Bobeth. (48) June 1.
 Das Versuchsfeld für Werkzeugmaschinen an der Technischen Hochschule zu Berlin.* G. Schlesinger. (48) June 1.
 Doppelte Fräsmaschine für Torpedo-Schraubenflügel von J. E. Reinecker in Chemnitz-Gablenz.* F. Nickel. (48) June 8.
 Die Maschinenfabrik Esslingen in Esslingen.* Alfred Widmaier. (48) June 8.
 Die Entwicklung und die neuzeitlichen Leistungen der Maschinenfabrik von J. M. Voith in Heidenheim a. d. Brenz.* (48) June 8.
 Der Wirkungsgrad der Explosions-Gasturbine.* Hans Holzwarth. (48) Serial beginning June 15.
 Die Werksanlagen des Stahlwerks Becker in Willich.* (50) Serial beginning June 20.
 Die Ausnützung hoher Luftleere in Dampfturbinen bei kleinen Austrittsquerschnitten.* F. Lösel. (48) June 22.
 Zum Wirkungsgrad der Explosionsturbine.* A. Stodola. (48) June 22.
 Die Fabrik der Daimler-Motoren-Gesellschaft in Stuttgart-Untertürkheim.* Robert Uhland. (48) June 22.
 Bemerkungen zu den Deutschen Material- und Bauvorschriften für Dampfkessel. C. Bach. (48) June 29.
 Die Neuanlage der Glesserei Rödinghausen in Menden i. W.* E. Vorbach. (50) June 27.
 Der Kraftverbrauch von elektrischen und hydraulischen Hebezeugen.* P. Eilert. (48) July 6.
 Studie über die Vergaser von Motorfahrzeugen.* A. Heller. (48) July 6.
 Dauerformen in der Eisenglesserei.* Hans Rolle. (50) Serial beginning July 25.
 Ausnutzung minderwertiger Brennstoffe auf Zechen des Oberbergamtsbezirks Dortmund. O. Döbelstein. (50) Aug. 1.
 Zum hundertjährigen Jubiläum der Firma Krupp.* (50) Aug. 8.

Metallurgical.

- The Constitution of the Sulphide Enclosures in Iron and Steel and the Desulphurisation Process.* G. Röhl. (71a) Vol. 4.
 The Intercrystalline Fracture of Iron and Steel.* J. C. W. Humphrey. (71a) Vol. 4.
 The Production of Steels and Ferro-Alloys Directly from Ore in the Electric Furnace.* Robert M. Keeney. (71a) Vol. 4.
 Practical Pyrometry in the Iron and Steel Industries.* S. H. Stupakoff. (58) July.
 Practical Cyaniding. John Randall. (45) Serial beginning Aug.
 The Inner Structure of Simple Metals. J. Alfred Ewing. (Paper read before the Inst. of Metals.) (47) Serial beginning Aug. 2.
 Gronwall Steel Refining Furnace.* D. A. Lyon. (62) Aug. 5.
 Tests of a Blast Furnace Type of Gas Producer. (Abstract from Technical Paper, Bureau of Mines.) (13) Aug. 8.
 The Fried. Krupp Establishments, Essen.* (11) Serial beginning Aug. 9.
 Lime in Cyanidation. C. E. Rhodes. (16) Aug. 10.
 Electric Furnace Pig Iron.* (20) Aug. 15.
 Cyaniding Troubles and Remedies. Herbert A. Megraw. (16) Serial beginning Aug. 17.
 Metallurgy at Bendigo.* M. W. von Bernewitz. (103) Aug. 17.
 Copper and Sulphur in Cyanide Solution. (103) Aug. 17.
 High Temperatures and the Electric Furnace. Joseph W. Richards. (46) Aug. 17.
 A Water Cooled Blast Furnace.* (13) Aug. 22.
 The Influence of Sulphur on Cast Iron. H. I. Coe. (Paper read before the British Foundrymen's Assoc.) (47) Aug. 23.
 Progress in the Electric Smelting of Zinc Ores. W. R. Ingalls. (Abstract of paper read before Canadian Min. Inst.) (73) Aug. 23.
 Blast Furnaces as Gas Producers. S. L. Goodale. (62) Aug. 26.
 Two-Stage Electric Smelting of Iron Ores.* Woolsey M'A. Johnson. (20) Aug. 29.
 The Disadvantages of the New American Standard Copper Specifications. Ernest A. Lewis. (105) Sept.
 Notes on Electric Zinc Smelting.* Woolsey M'A. Johnson. (105) Sept.
 The Production of Porous Metals.* (Translated in abstract from *Ingenioren*.) (105) Sept.

*Illustrated.



Metallurgical—(Continued).

- Crystolon-Silicon Carbide; The Plant of the Norton Company at Chippawa, Ontario.* Francis A. J. FitzGerald. (105) Sept.
- Zinc Ore-Dressing in Colorado. H. C. Parmelee. (105) Sept.
- "Exothermic Steel."* Walter O. Amsler. (105) Sept.
- Le Développement de l'Industrie du Zinc en Haute-Silésie.* Fr. Krantz. (93) Aug.
- Recherches sur les Alliages de Fer et Charbon.* M. Wittorf. (93) Aug.
- Variations de la Durée du Son des Alliages en Fonction de la Température.* Felix Robin. (93) Aug.
- Ueber das Trockenverzinken oder Sherardisieren.* Ernst Bernheim. (50) May 23.
- Neuere amerikanische Hochofenanlagen. H. Groeck. (48) May 25.
- Ueber das Zustandsdiagramm Schwefeleisen—Eisen und den durch Schwefel hervorgerufenen Rotbruch.* E. Becker. (Extract from Dissertation read at Kgl. Techn. Hochschule in Breslau.) (50) June 20.
- Beitrag zum Entwicklungsstand neuzeitlicher Elektroöfen.* W. Kunze. (50) Serial beginning July 4.
- Ueber den Einfluss des Glessens auf die Qualität von Flusseisenbrammen. C. Canaris. (From Dissertation read at Kgl. Techn. Hochschule zu Breslau.) (50) Serial beginning July 18.
- Beiträge zur Verhüttung schwefelhaltiger Kiesabbrände in Hochofen. E. Schulz. (Extract from Dissertation read at Kgl. Techn. Hochschule in Breslau.) (50) Serial beginning Aug. 1.
- Die Entwicklung der Gussstahlfabrik auf metallurgischem Gebiete.* (50) Aug. 8.

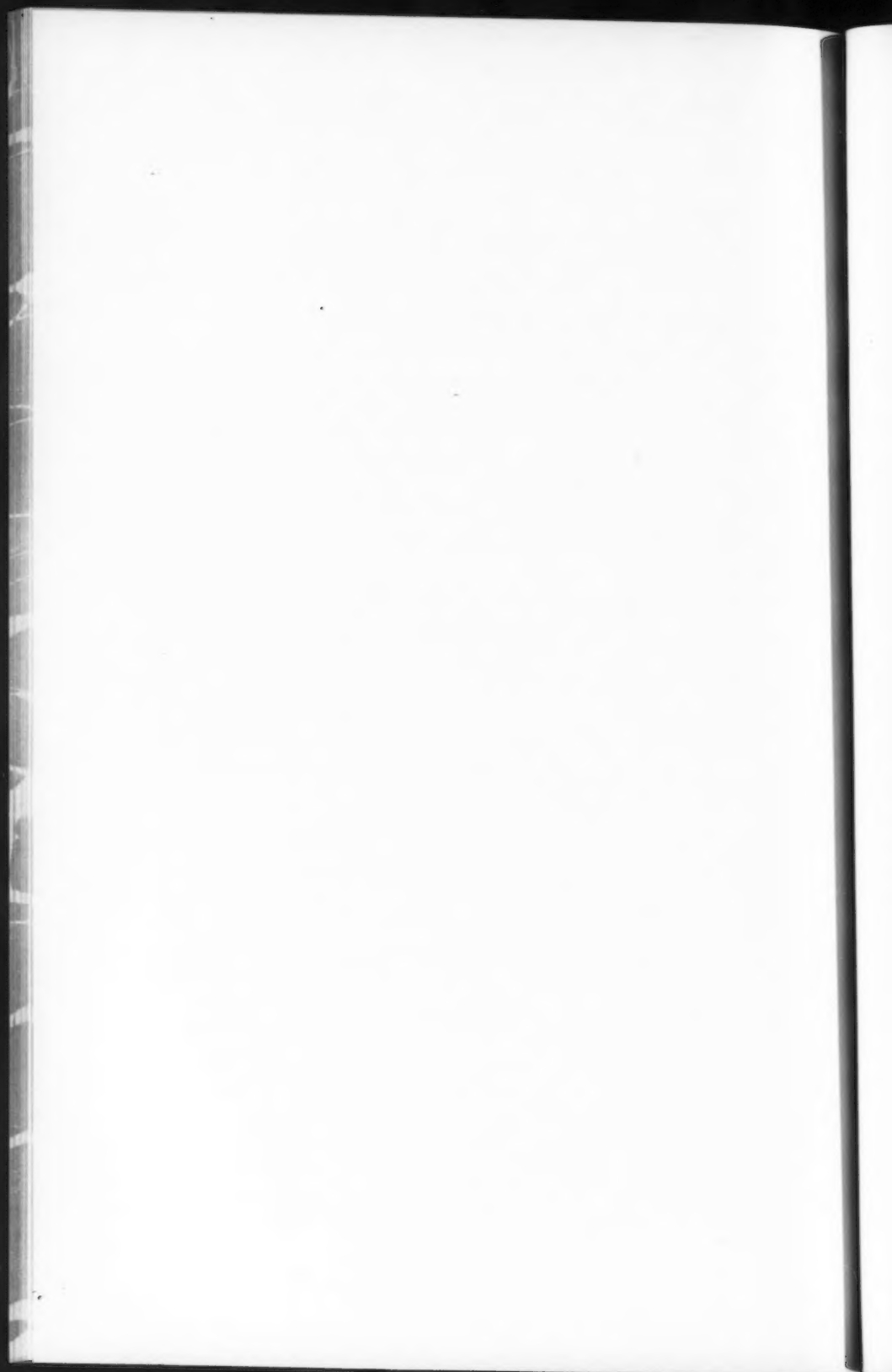
Military.

- A New Form of Underwater Attack, a Torpedo that Carries a Gun. Robert G. Skerrett. (46) Aug. 3.
- The Flight of Projectiles, the Actual Positions of a Shell from Gun to Target.* N. C. Twining. (46) Serial beginning Aug. 10.
- Smokeless Powder with Reference to its Granular Form.* Charles A. Junken. (19) Aug. 31.
- L'Epreuve d'Endurance Militaire des Véhicules de Poids Lourds (1^{er}-31 juillet 1912).* (33) Aug. 3.

Mining.

- Presidential Address (Danger of Coal Dust in Mines). William Edward Garforth. (106) Pt. 4.
- Why Leave Shaft Pillars? W. H. Pickering and Basil H. Pickering. (106) Pt. 4.
- Electricity in a Spanish Lead Mine.* (26) July 26.
- Mining by Timbering and Filling.* Albert L. Toenges. (45) Aug.
- Gold Dredging up to Date.* Arthur Lakes. (45) Aug.
- Explosions in Mines Committee; First Report. (57) Aug. 2; (22) Aug. 2.
- Buffalo Mine and Mill, Cobalt.* W. J. Dobbins and H. G. S. Anderson. (16) Aug. 3.
- The Pollution of a River by Placer Mining.* (14) Aug. 3.
- Modern Methods of Gravel Excavation (Mining).* Francis J. Dennis. (103) Aug. 3.
- Joplin Ore Buckets.* (16) Aug. 10.
- Concrete Collars for Mine Shafts.* (16) Aug. 10.
- Gold Placers of Arizona, Dry Washings of Value.* T. Lane Carter. (103) Aug. 10.
- Rapid Mine Tunneling in Arizona.* Norman Carmichael. (16) Aug. 17.
- Magazines and Thaw Houses for Explosives. Clarence Hall and Spencer P. Howell. (Abstract of paper published by U. S. Bureau of Mines.) (14) Aug. 17; (86) Aug. 14.
- Lowering Ground-Water Level by a Deep Drainage Tunnel. (14) Aug. 17.
- The Effects of Stemming on the Efficiency of Explosives.* (86) Aug. 21.
- Gas Analysis as an Aid in Fighting Mine Fires. George A. Burrell and Frank M. Selbert. (57) Aug. 23.
- Electric Lamps for Miners: Successful Lamps in the Home Office Competition.* (22) Aug. 23.
- The Maple Dredge, Montana (for gold dredging).* Lewis H. Eddy. (16) Aug. 24.
- Sand Filling on the Rand. Edgar Pam. (45) Sept.
- Churn-Drill Examination of Placers.* James E. Dick. (45) Sept.
- Preservation of Mine Timbers.* (45) Sept.
- Gasoline Motors in Mines.* A. F. King. (45) Sept.
- Barometric Pressure and Mine Gas.* (45) Sept.
- Note sur l'Emploi des Marteaux Pneumatiques dans l'Exploitation des Mines de Houille.* A. Jacquelin. (32) May.

*Illustrated.



Miscellaneous.

- Going Value. Frank F. Fowle. (42) Aug.
 Some Recent Advances in the Measurement of Light and Illumination.* J. S. Dow and V. H. Mackinney. (Abstract of paper read before the Optical Convention.) (73) Aug. 2.
 A Simplified Illuminometer.* Clayton H. Sharp and Preston S. Millar. (27) Aug. 3.
 Natural Gas in Hungary: A Remarkable Eruption near a Gas Well.* A. Strobl. (Abstract from *Journal* of the Soc. of Hungarian Engrs. and Archts. of America.) (13) Aug. 8.
 Equipment of an Engineering Laboratory. (20) Aug. 8.
 Work and Prospects of the Logging Engineer. (Abstract from *American Forestry*.) (13) Aug. 22.
 The Measurement of Velocities, a Survey of Various Devices Used.* E. Hoeltje. (From *Der Anschau*.) (19) Aug. 24.
 A Method of Contract Payments Based on Cost. George I. Battelle. (13) Aug. 29.

Municipal.

- Some Recent Improvements in Street Pavements. G. W. Tillson. (2) July.
 The Engineer in His Relations to the City Plan. Nelson P. Lewis. (2) July.
 An Improved Concrete Pavement. E. W. Groves. (67) Aug.
 New Specifications for Creosote Wood Block Pavement. (96) Aug. 1.
 The Municipal Housekeeping of Moose Jaw, Saskatchewan. (13) Aug. 1.
 Town Planning; Laying Out New Towns and Cities.* W. H. Price. (Abstract of paper read before the Inst. of Mun. and County Engrs.) (104) Aug. 2.
 The Physical Properties of Rock for Road Building. (86) Aug. 7.
 Concrete Pavement at Fond du Lac. J. S. McCullough. (Abstract of paper read before the Assoc. of Am. Portland Cement Mfrs.) (14) Aug. 10.
 Instructions to Engineers of the Illinois Highway Commission for the Construction of Plain and Bituminous Macadam. (86) Aug. 14.
 Some Considerations in the Choice of a Pavement. Leonard S. Smith. (Paper read before Eng. Soc. of Wisconsin.) (96) Aug. 15.
 Some Standards of the Department of Public Works of the City of Pittsburgh, Pa., for Street Construction.* (86) Aug. 21.
 Rail Plateways (for Public Roads).* G. Noble Fell. (Abstract of paper read before Soc. of Engrs.) (22) Aug. 23.
 Maintenance of Roads and Pavements. James Owen. (Paper read before Am. Road Bldrs. Assoc.) (96) Aug. 22.
 Suggestions Towards a Standard Specification for Bituminous-Bound Carriageways. John S. Brodie, M. Inst. C. E. (Abstract of paper read before the Inst. of Mun. and County Engrs.) (104) Aug. 23.
 Expansion Joints for Concrete Pavements.* (86) Aug. 28.
 Experiments of French Engineers for Improving the Strength of Wood for Pavements. (86) Aug. 28.
 California's State Highway Organization. (14) Aug. 31.

Railroads.

- The Illinois Traction System.* Fred H. Williams. (5) Oct., 1911.
 The Relation of Electric Lines to Steam Roads. Wm. J. Rose. (98) July.
 Subaqueous Tunneling. Henry Japp. (2) July.
 Tie Yard of the Great Northern Ry., at Boston, England.* (18) July 20.
 Solving the Rail Problem on the Harriman Lines.* (18) July 20.
 Report on Broken Rail, Sharon Wreck, Great Northern Ry.* James E. Howard. (Report to the Interstate Commerce Comm.) (18) July 20.
 Highly Superheated Steam in Locomotive Service.* G. R. Ryder. (Abstract of paper read before the Southern and South-Western Ry. Club.) (47) July 26.
 Care of Locomotive Boiler Tubes.* Walter R. Hedeman. (25) Aug.
 The Electro-Pneumatic Brake System for Steam Road Service.* Walter V. Turner and P. H. Donovan. (3) Aug.
 Oxy-Acetylene Welding and Cutting in Railroad Work.* C. E. Lester. (94) Aug.
 Central Station Electric Power for Railroad Operation. Frederick Darlington. (42) Aug.
 Economies in Railway Operation. F. E. Wynne. (42) Aug.
 The Problem of the Rail-Joint.* A. Baum. (88) Aug.
 Coal Yards of the Philadelphia and Reading Ry. Co. at St. Clair, Pa.* P. S. Lewis. (87) Aug.
 Concrete Practice, Grand Trunk Railway.* (87) Aug.
 The Rallophone Train Control.* (21) Aug.
 The College Goods Station, Glasgow North British Railway.* (21) Aug.
 Permanent Way of the South American Railways.* (21) Serial beginning Aug.
 Management of Superheated Locomotives on Italian State Railways.* (21) Serial beginning Aug.

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Railroads—(Continued).

- A Large Retaining Wall for the Canadian Pacific Railway in Toronto.* (96) Aug. 1.
- Block Signals on an Electric Railway.* John Leisenring. (13) Aug. 1.
- Switching Locomotives with Improved Valve Gears.* (13) Aug. 1.
- New Rail Sections.* (15) Aug. 2.
- Division Shops of the Chicago & Northwestern Ry., Boone, Ia.* (18) Aug. 3.
- The Internal Combustion Engine, with Special Reference to its Use as Motive Power on Railway Locomotives.* W. R. McKeen, Jr. (Abstract of paper read before the Comm. of Investigation on Smoke Abatement and Electrification of Railway Terminals, Chicago.) (18) Aug. 3; (47) Aug. 23.
- The Relation of the Brick Arch to Locomotive Operation.* John P. Neff. (Abstract of paper read before the Ry. Club of Pittsburgh.) (18) Aug. 3.
- St. Polten-Mariazell Single-Phase Line of the Austrian State Railways.* (17) Aug. 3.
- The Corrosion of Track Fastenings in Zinc-Treated Ties. (14) Aug. 3.
- The Derailment of the Twentieth Century Limited at Hyde Park. (14) Aug. 3.
- New Railway Terminals, Seattle, Wash.* (13) Aug. 3.
- The Manufacture of Railway Ties. (96) Aug. 8.
- Construction of the Algoma Central and Hudson Bay Railway and the Algoma Eastern Railway.* R. S. McCormick. (96) Aug. 8.
- Illinois Central's New Centralia Yards.* Shelby S. Roberts. (15) Aug. 9; (87) Aug. 9.
- Valuation of Railways in New Jersey. (15) Aug. 9.
- Steam Locomotives for High Speed Passenger Service. E. C. Schmidt and F. W. Marquis. (15) Aug. 9.
- West Shore Weehawken Tunnel Ventilation.* (15) Aug. 9; (14) Aug. 10.
- Details of Railway Telegraph and Telephone Installations. W. J. Camp. (Abstract of paper read before the Assoc. of Railway Telegraph Supts.) (18) Aug. 10.
- New Dayton Freight House of the Ohio Electric Railway.* (17) Aug. 10.
- An Incline Railway for Construction Purposes.* (14) Aug. 10.
- A Portable Substation with Outdoor Transformers.* (17) Aug. 10; (18) Aug. 24.
- Report on Rail Corrugation.* Arthur Busse. (Abstract of report to the Inter-Street and Interurban Ry. Assoc.) (17) Aug. 10.
- Wind-Bracing in the Grand Central Passenger Terminal, New York.* (14) Aug. 10.
- Station of San Diego Electric Ry. Co.* Leroy W. Allison. (64) Aug. 13.
- Comparative Strength and Resistance of Various Tie Timbers.* (96) Aug. 15.
- A 2400-Volt Direct-Current Electric Railway at Butte, Mont. J. J. Linebaugh. (Abstract from *General Electric Review*.) (13) Aug. 15.
- The Physical Valuation Department of the Nebraska State Railway Commission. C. H. Gerber. (13) Aug. 15.
- Compensating Grades for Curvature. (13) Aug. 15.
- Clasp Brakes for Passenger Cars; Considers the Advantages of this Arrangement, which is now Standard on the Reading and Central of New Jersey.* (15) Aug. 16.
- Acetylene Signal Lights on Boston & Maine.* (15) Aug. 16.
- Rose Oil Column for Filling Tender Tanks.* C. S. Green. (15) Aug. 16.
- The Use of Manganese in Track Work.* (15) Aug. 16.
- The Cost of a Treated Tie. D. Burkhalter. (15) Aug. 16.
- Difficult Work on a Mining Railroad in Utah.* (14) Aug. 17.
- New Third-Rail and Contact-Shoe System of Philadelphia & Western Railway.* (17) Aug. 17.
- Some Roadbed and Track Standards of the B. R. & P. Ry.* (18) Aug. 17.
- Experimental Overhead Construction on a French Electrified Road.* (18) Aug. 17.
- Freight and Passenger Locomotives of the Dessau-Bitterfeld Line.* (18) Aug. 17.
- The Organization for, and Methods and Results of, Physical Valuation in Nebraska.* E. C. Hurd. (86) Aug. 21.
- Constructing a Concrete Roundhouse by Chuting from a Movable Steel Tower.* (86) Aug. 21.
- Cedar Hill Engine House Facilities, New York, New Haven and Hartford R. R.* J. M. Sullivan, Jr. (Abstract of paper read before the Conn. Soc. of Civil Engrs.) (13) Aug. 22.
- Railroad Appraisal and Taxation in New Jersey. Charles Hansel. (13) Aug. 22.
- Defects in Steel Ingots and Steel Rails.* J. B. Nau. (20) Aug. 22.
- Testing Plant Results and the Locomotive Boiler.* Lawford H. Fry. (12) Aug. 23.
- Tables for Finding Proper Tonnage Rating.* Paul M. La Bach. (15) Aug. 23.
- Radial Buffer between Engine and Tender.* (15) Aug. 23.
- Powerful Mikado Locomotives.* (Chicago, Rock Island and Pacific R. R.) (15) Aug. 23.
- Palmer-Providence Line of Grand Trunk.* H. Cole Estep. (15) Aug. 23.

*Illustrated.

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Railroads—(Continued).

- Mikado Type Locomotives for the Delaware, Lackawanna & Western R. R.* (18) Aug. 24; (15) Aug. 30.
- Swiss Electric Lighting Car.* (18) Aug. 24.
- Aerial Railways in Switzerland. (18) Aug. 24.
- Horse-Shoe Arch Culverts on an Interurban Road.* (14) Aug. 24.
- Erecting the Grand Central Terminal.* (14) Aug. 24.
- Foreign Convention Report on Self-Propelled Cars; Data are given on the Operation of Gas-Electric Narrow-Gage and Storage Battery Standard-Gage Cars. (17) Aug. 24.
- Automatic Block Systems with Light Signals on Two Interurban Railways.* (17) Aug. 24.
- Cab Signal and Dispatching System.* (13) Aug. 29.
- Car Shops for an Electric Railway.* (13) Aug. 29.
- The Invention of the Automatic Car Coupler.* (13) Aug. 29.
- Steel Side Frames for Freight Car Trucks.* (15) Aug. 30.
- Seepage in Subaqueous Railroad Tunnels.* (14) Aug. 31.
- Tonnage Rating. J. M. Daly. (Abstract from paper read before the Traveling Engrs. Assoc.) (18) Aug. 31.
- Building a New Coal Road Across Iowa.* (14) Aug. 31.
- Power Station of the Waterloo, Cedar Falls & Northern Railway.* (17) Aug. 31; (17) Aug. 24.
- Apparatus for High-Voltage Direct-Current Railways. E. S. Johnson. (Paper read before Central Elec. Ry. Assoc.) (17) Aug. 31.
- Mikado Locomotives for the Chicago Great Western R. R.* (18) Aug. 31.
- Field Control of the Pennsylvania R. R. Electric Locomotives.* (18) Aug. 31.
- Handling of Long Passenger and Freight Trains with Modern Air Brake Equipment.* W. F. Walsh. (Abstract from report to Traveling Engrs. Assoc.) (18) Aug. 31.
- The Bernina Electric Railway.* C. Van Langendonck. (9) Sept.
- Insuring Soundness in Steel Rails.* Robert W. Hunt. (Paper read before Inter. Assoc. for Testing Materials.) (20) Sept. 5.
- Vagons de Grande Capacité, à Déchargement Universel, Système Arbel.* (34) Aug.
- Wagons Frigorifiques à Circulation de Saumure, Système Frigator.* Ch. Jacquin. (33) Aug. 3.
- Locomotive Electrique, Type Colonial, du New-York-New-Haven and Hartford Railroad.* (33) Aug. 3.
- Umgestaltung der Bahnhofsanlagen in Darmstadt.* (49) Vol. VII-IX, 1912.
- Das neue Empfangsgebäude auf Bahnhof Hagen i. Westf.* (40) Serial beginning June 1.
- Eine neue Gleisbremse.* Lohse. (40) June 29.
- Die neue Linie Lauterbrunnen-Wengen der Wengernalpbahn.* C. Spinnler. (107) Serial beginning July 6.
- Die Hilfszüge der Grossherzoglich Badischen Staatsbahnen.* Courtin. (48) July 6.
- Kuppelstangen-Antrieb nach Bauart Brown, Boveri & Cie. für elektrische Lokomotiven mit hochgelagerten Antriebsmotoren.* J. Buchli. (107) Serial beginning July 13.
- Das neue Empfangsgebäude auf Bahnhof Dortmund.* Hüter. (40) Serial beginning July 13.
- Ablaufanlagen auf Verschiebebahnhöfen für Eselrückenbetrieb Sammet. (102) Serial beginning Aug. 1.

Railroads, Street.

- The Extension of the Central London Railway to Liverpool Street.* (73) July 26.
- City Extension in Relation to the Planning of Street Railway Systems.* (13) Aug. 1.
- The Pittsburgh Low-Floor Car.* (17) Aug. 3.
- Section 3, Lexington Avenue Subway, New York. (14) Aug. 3.
- Grouting Leaks in a Chicago River Tunnel; Flow Develops Following Construction of a Bascule Bridge Pit Above Roof.* (14) Aug. 3.
- Brooklyn Report on the Equipment and Constructional Features of Prepayment Cars.* (17) Aug. 3.
- The Influence of an Electric Railway in the Development of Large Cities and Their Social Aspects.* M. L. Dausset. (Abstract of paper read before the Inter. Street and Interurban Ry. Assoc.) (17) Aug. 3.
- Battery-Operated Street Cars as an Off-Peak Load. (27) Aug. 3.
- The Pittsburgh Double-Door, Double-Deck Car.* (17) Aug. 10.
- Structural Features of the Lexington Avenue Subway.* (14) Aug. 10.
- The New York Double-Deck Car.* (17) Aug. 10.
- Vehicle Paths in Special Work (Street R. R. track).* (17) Aug. 10.
- British Columbia Electric Railway Track Reconstruction on Granville Street, Vancouver, B. C.* (17) Aug. 17.

*Illustrated.



Railroads, Street--(Continued).

- Forced-Draft Ventilation of Conduit Run in Brooklyn. (17) Aug. 17.
 Cincinnati Traction Company Shop Practice.* (17) Aug. 17.
 The St. Louis Center-Entrance Trail Car.* (17) Aug. 17.
 Train Tests in the Cambridge Subway.* (17) Aug. 24.
 Progress of the Lexington Avenue Subway.* (14) Serial beginning Aug. 31.
 Crossing with Manganese Filler.* A. E. Harvey. (17) Aug. 31.
 La Ventilation du Central London Railway.* (33) July 27.
 Le Métropolitain Electrique de Hambourg.* (33) Aug. 10.

Sanitation.

- Automatic Apparatus for Sewage Disposal Works.* Weston Gavett. (36) June.
 The Production of Chlorine for Water and Sewage Sterilization. Joseph Race. (96) Aug. 1.
 Baltimore Sewage Disposal Plant.* (60) Aug.
 Heating and Ventilating, No. 80 Maiden Lane Building, New York.* (70) Aug.
 The Bronx Sewer Agreement, New York City. (13) Aug. 1.
 One Solution of the Sludge Problem. Arthur Hindle, M. Inst. C. E. and P. Holt Whitaker, Assoc. M. Inst. C. E. (Abstract of paper read before the Royal San. Inst.) (104) Aug. 2.
 Prevention of Aerial Nuisance from Sewage. Herbert D. Bell. (Paper read before the Assoc. of Mgrs. of Sewage Disposal Works.) (14) Aug. 3.
 Screening Sewage at Plainfield.* Roy S. Lamphear. (14) Aug. 3.
 Sewage Precipitation at Providence. (14) Aug. 3.
 Hot Water Heating with Gas Fuel; Description of the Equipment for Heating a Cincinnati Residence.* (101) Aug. 9.
 Changes in the Design of the Plainfield Sewage Disposal Plant. R. S. Lamphear. (14) Aug. 10.
 Sewage Disposal for Country Homes.* (96) Aug. 8.
 Construction of a Large Sewer in Spokane; Mechanical Excavators Open Trench, Supplying Gravel to Washer for Concrete.* R. A. Brackenbury. (14) Aug. 10.
 Sewer Maintenance at Hampstead. Oliver E. Winter. (Abstract of paper read before the Inst. of Mun. and County Engrs.) (14) Aug. 10; (104) Aug. 16.
 Treating Gas Liquor in Connection with Sewage. Reginald Brown. (Abstract of paper read before the Royal San. Inst.) (66) Aug. 13.
 Methods and Cost of Sewer Construction and Maintenance in Webb City, Missouri. E. W. Robinson. (86) Aug. 14.
 The Status of Sewage Disposal in Massachusetts. Robert Spurr Weston and W. L. Butcher. (86) Aug. 14.
 Effective Furnace Work Prevented by Law.* (101) Aug. 16.
 The Overflows of the Boston Marginal Conduit (Sewer).* Edward C. Sherman, M. Am. Soc. C. E. (14) Aug. 17.
 Sewage Disposal at the Polk State Institution. (14) Aug. 17.
 Combined Central Heating and Electric Plants.* Edwin D. Dreyfus. (Abstract of paper read before the National Dist. Heating Assoc.) (64) Aug. 20.
 Heating and Ventilation of a Factory.* (Paper read before Am. Soc. of Heating and Ventilating Engrs.) (96) Aug. 22.
 Sewage Purification at Reading, Penn.* E. Sherman Chase. (13) Aug. 22.
 Recommendations for an Intercepting Sewer and Imhoff Tank at Albany, N. Y. (13) Aug. 22; (14) Aug. 3.
 The Bedford Sewage Works. (14) Aug. 24.
 Mechanical Ventilation for a Large Factory. (14) Aug. 24.
 A Study of the Typhoid Fever Epidemic at Rockford, Illinois, Caused by a Contaminated Water Supply. Edwin O. Jordan and Ernest E. Irons. (86) Aug. 28.
 Some Characteristics of Typhoid Fever Outbreaks which Serve to Indicate the Causes and Modes of Infection. (86) Aug. 28.
 Street Cleaning and Refuse Disposal. F. W. W. Doane. (Paper read before Union of Nova Scotia Municipalities.) (96) Aug. 29.
 The Prairie Farm Drainage Project at Albia, Mich.* (14) Aug. 31.
 Hauskläranlagen nach dem reinen Faulverfahren. Graevell. (81) Vol. 4, 1912.
 Ein Beitrag zur graphischen Ermittlung der Grösstabflussmengen in Städtischen Kanalnetzen unter besonderer Berücksichtigung von Notauslässen. Range. (39) June 20.
 Zerfressene Zementrohre.* Julius Barth. (80) July 6.
 Schmiedeeiserne Rohrleitungen.* (7) July 13.
 Ueber die Dauer der Fensterlüftung. Max Berlowitz. (7) July 20.
 Warmwasserheizung nach dem Elnrohrsystem mit zeitweise motorischem Umtrieb.* Brune. (7) July 20.
 Elniges über die sanitäre Bauart und Elnrichtung von amerikanischen Schlachthäusern. Wilh. Paul Gerhard. (7) July 27.
 Eisenbetonumschnürte Steinzeugröhren grosser Lichtweiten als Ersatz für Kanäle aus Stampfbeton oder Mauerwerk. Hugo Schmidt. (51) Serial beginning Aug. 10.

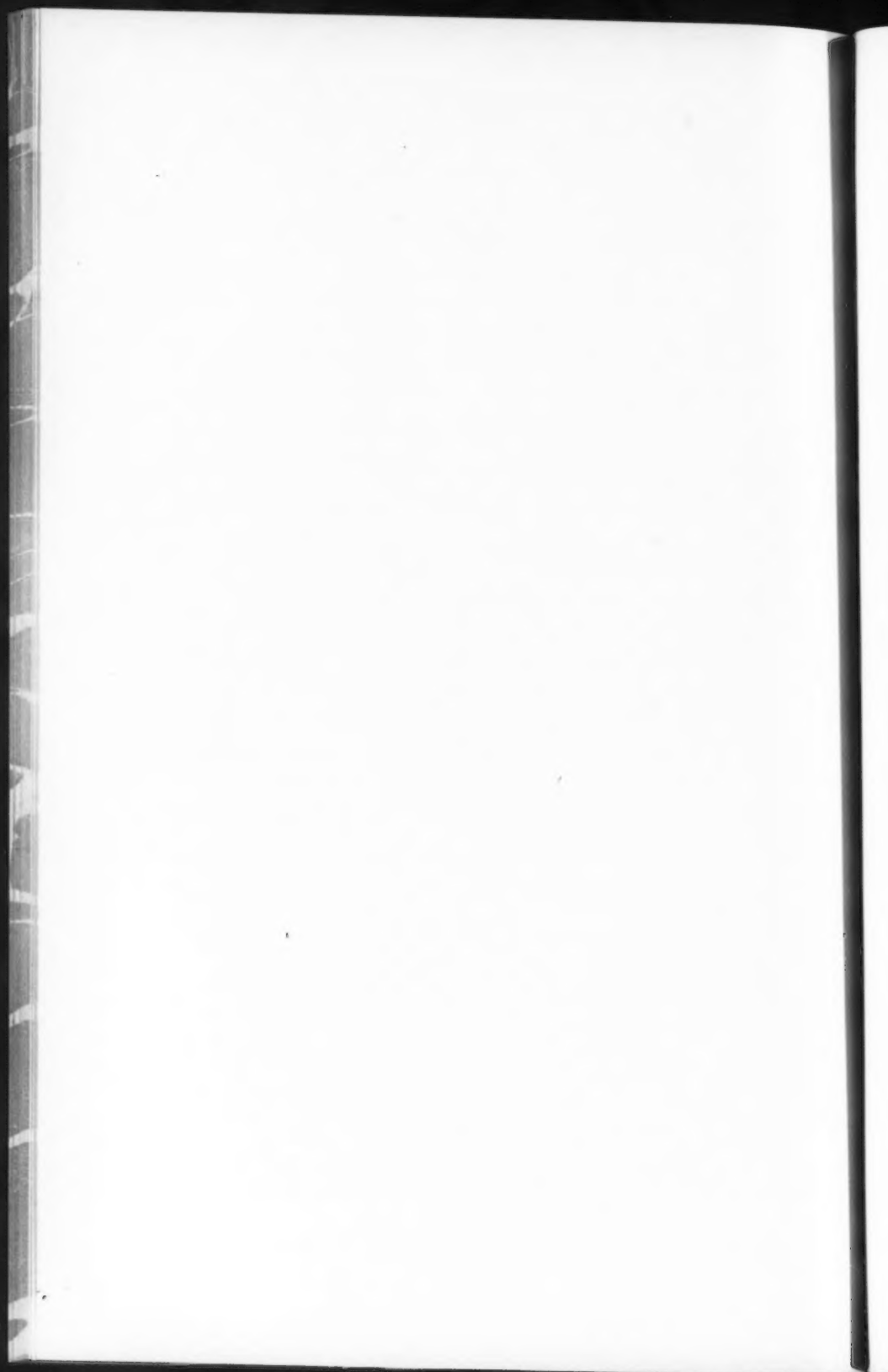
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Structural.

- The Preservation of Iron by Means of Paint.* J. Newton Friend. (71a) Vol. 4.
 The Intercrystalline Fracture of Iron and Steel.* J. C. W. Humfrey. (71a) Vol. 4.
 Pneumatic Caisson Foundations for Tall Buildings. Alex. Allaire. (5) Oct., 1911.
 Fabrication and Erection of Forms and Centers (for Concrete). Jerome Cochran. (36) May.
 Magnesian Cement in India. C. H. B. Burlton. (29) July 26.
 Proportioning Gravel Concrete. (67) Aug.
 American Schoolhouses.* Fletcher B. Dresslar. (70) Serial beginning Aug.
 The Collapse of the Porter Avenue Pumping Station at Buffalo; a Résumé. (13) Aug. 1.
 A Loading Formula for Hooped Reinforced-Concrete Columns. F. H. Constant. (13) Aug. 1.
 A New Impact Formula. Gustav Lindenthal. (13) Aug. 1.
 Vibrations of Buildings due to Street Traffic.* Elmer E. Hall. (13) Aug. 1.
 A Method of Proportioning Concrete. (13) Aug. 1.
 Concrete Substructural Water-Proofing. J. R. Wickie. (96) Aug. 1.
 Wood in Compression; Bearing Values for Inclined Cuts.* Malverd A. Howe. (13) Aug. 1.
 The Steel Framework of the Aeolian Building.* (14) Aug. 3.
 Difficult Substructure Work on the United States Barge Office, New York.* (14) Aug. 3.
 Properties of Nickel Cast Steel.* Edwin F. Cone. (20) Aug. 8.
 The Sherardizing Process for Preserving Iron and Steel. Oliver W. Storey. (Abstract from *Wisconsin Engineer*.) (13) Aug. 8.
 A Compressed Air Concrete Mixer and Conveyor.* (13) Aug. 8.
 Two Large Industrial Buildings of Reinforced Concrete.* (14) Aug. 10.
 A Building Failure in Brooklyn. (14) Aug. 10.
 The New Port Reading Creosoting Plant; Joint Project of Philadelphia & Reading and Central Railroad of New Jersey. (14) Aug. 10.
 A Reinforced Concrete Bakery in Philadelphia.* (14) Aug. 10.
 Graphical Calculations for the Design of Lighting Systems.* R. F. Pierce. (83) Aug. 15.
 Methods of Sampling Steel Billets. C. W. Danforth. (20) Aug. 15.
 Tensile Tests of Splices of Reinforcing Bars. (96) Aug. 15.
 New Method of Testing Rivet Steels.* G. Frémont. (Paper read before Inter. Assoc. for Testing Materials.) (96) Aug. 15.
 A Plant for Testing Fireproof Tiling.* (13) Aug. 15.
 Further Investigations of Puzzolan-Portland Cements.* Edward Duryce. (13) Aug. 15.
 Testing of Refractories Important.* Hartley M. Phelps. (76) Aug. 15.
 A Nine-Story Concrete Abattoir.* (14) Aug. 17.
 Temporarily Shoring a 300-Ton Column.* (14) Aug. 17.
 Commercial Creosotes for Wood Preservation. C. P. Winslow. (Abstract of *Bulletin*, U. S. Forest Service.) (14) Aug. 17.
 Structural and Boiler Steel Specifications.* (20) Aug. 22.
 Formula for Lever Arm of Doubly Reinforced Concrete Beams. Arthur G. Hayden. (13) Aug. 22.
 A New Moist Closet for Cement Test Pieces. Clarence N. Wiley. (13) Aug. 22.
 Methods and Costs of Applying Stucco with the "Cement Gun." R. C. Hardman. (13) Aug. 22.
 Improved Flow-Plate Apparatus for Comparing the Consistency of Bituminous Cements. S. Whinery. (13) Aug. 22.
 The Strength of Struts.* R. V. Southwell. (11) Aug. 23.
 A Portable Steel Tower (For Handling Concrete).* (14) Aug. 24.
 Shoring the Academy of Music, New York.* (14) Aug. 24.
 Tests of Wrought-Iron Girders, A Study. Frank P. McKibben. (14) Aug. 24.
 Conduit Systems in Concrete Buildings.* J. P. Morrissey. (27) Aug. 24.
 Methods and Cost of Erecting a Warehouse by the Aiken System of Erecting Concrete Walls.* (86) Aug. 28.
 The Physical Significance of the Elastic Limit: Standard Nomenclature Desirable in Discussion of Test Data. H. F. Moore. (Paper read before Inter. Assoc. for Testing Materials.) (86) Aug. 28.
 A Brief Summary of American Tests on Paints for Metallic Structures. Allerton S. Cushman. (Paper read before Inter. Assoc. for Testing Materials.) (86) Aug. 28.
 Fire Tests for Partitions for Buildings. (13) Aug. 29.
 The Need of a Compression Test for Concrete. Cloyd M. Chapman. (13) Aug. 29.
 Some Observations on the Disintegration of Cinder Concrete.* George Borrowman. (Abstract from *Journal of Industrial and Engineering Chemistry*.) (13) Aug. 29.

*Illustrated.



Structural—(Continued).

- Girders and Trusses in the Guaranty Trust Building, New York.* (14) Aug. 31.
Applications of Oil-Mixed Concrete. (Abstract of *Bulletin*, Office of Public Roads.) (14) Aug. 31.
Imperfect Concrete Piles.* (14) Aug. 31.
Principles of Fire-Resisting Construction for Industrial Plants.* F. P. Walther. (9) Serial beginning Sept.
Uniform Nomenclature of Iron and Steel: Committee's Report to International Association for Testing Materials. (20) Sept. 5.
Nouveau Plancher en Ciment Armé à Poutres non Apparentes.* (84) July.
Avantages Pratiques de l'Emploi du Ciment Armé dans la Construction des Usines du Domaine des Industries Textiles. (84) July.
Machine pour l'Essai des Briques.* (34) Aug.
Getreidesilo im Hafen von Rosario.* E. Luft. (48) Serial beginning May 11.
Einfluss der Höhe des Sandzusatzes auf die Festigkeit von Trasskalkmörtel. Burchartz. (40) May 22.
Fabrikneubau in Dottikon: der Schuhfabrik C. F. Bally A.-G. in Schönenwerd.* (107) Serial beginning June 22.
Dampfhärten von Zementwaren. (80) July 6.
Mauersteine aus Müllschlacke.* H. Burchartz. (Report of the Kgl. Materialprüfungsamt in Gross-Lichterfelde-West.) (80) July 13.
Hydraulischer Kalk für Kalksandsteine. Bernh. Kosmann. (80) Aug. 8.
Prüfung von Zuschlagstoffen für die Mörtel- und Betonbereitung. H. Burchartz. (Report of the Kgl. Materialprüfungsamt zu Berlin-Lichterfelde-West.) (80) Aug. 10.
Eisenbeton-Konstruktionen der neuen evang. Friedenskirche zu Offenbach a. M.* Jean Wörrelein. (51) Aug. 10.

Topographical.

- Sunshine and Shadow (Planning Situation of Buildings of Tuberculosis Sanatorium). J. R. Hoffert. (36) June.
Edmonton Bench Marks.* C. C. Sutherland. (96) Aug. 29.
Die stereophotogrammetrische Messmethode.* O. Walter. (107) Serial beginning July 27.

Water Supply.

- The Municipal Hydro-Electric Works of the City of Winnipeg at Point du Bois Falls. W. G. Chace. (5) Jan., 1911.
The Sterilization of a Public Water Supply.* W. Muir Edwards. (5) Jan., 1911.
Hydro-Electric Power Development of the British Canadian Power Company.* N. R. Gibson, S. M. Waldron and A. L. Mudge. (5) Jan., 1911.
Some Structures and Construction Methods on an Irrigation Project in Sacramento Valley, California.* (36) May.
Design of Channels and Ditches of Trapezoidal Sections.* H. S. Chuck. (36) May.
Elements of Hydro-Resistant Construction and Development of Ultimate Type of Dam.* Geo. E. Ladshaw. (36) May.
The Winnipeg Hydro-Electric Power Station.* (11) Serial beginning July 26.
Bombay Water Supply.* (12) July 26.
The Action of Alkali on Cement Pipe Lines. Will L. Brown. (67) Aug.
The Water-Works of New York. Edward Wegmann. (Abstract of paper read before the Am. W. W. Assoc.) (60) Aug.
The Art of Water Purification. C. Herschel Koyl. (1) Aug.
Concrete Water Tower in Holland. (67) Aug.
Independent Water Supply Installations for Country Houses.* Wm. Paul Gerhard. (70) Serial beginning Aug.
Hypochlorite Sterilization at Kansas City, Mo.* S. Y. High. (Abstract of paper read before the Am. W. W. Assoc.) (96) Aug. 1.
The High Pressure Fire Service System in Baltimore, Md.* (13) Aug. 1.
The Influence of Poisson's Ratio on Stresses in Arch Dams.* Lars Jorgensen. (13) Aug. 1.
Use of Copper-Sulphate in Purifying Water Supplies. Geo. Embrey. (Paper read before Inst. of Water Engrs. of Great Britain.) (96) Aug. 1.
The Production of Chlorine for Water and Sewage Sterilization. Joseph Race. (96) Aug. 1.
Pumping Engine Tests: New Orleans Filtration Pumping Station. L. E. Strothman. (13) Aug. 1.
Turbine-Driven Centrifugal Pumps for Water-Works Service. Walter O. Beyer. (Abstract of paper read before the Am. Water Works Assoc.) (47) Aug. 2.
The Removal of Entrained Air from the Catskill Aqueduct. (14) Aug. 3.
A Concrete-Faced Earth Dam at McAlester, Oklahoma.* (14) Aug. 3.
The Track for the Construction Traveler at Keokuk (For Building Dam).* (14) Aug. 3.
Methods Employed in Constructing the Beacon Hill Reservoir, Seattle, Wash., with Data on Labor Required.* E. D. Alexander. (86) Aug. 7.

*Illustrated.



Water Supply—(Continued).

- Port Arthur Water Supply. (96) Aug. 8.
 Progress on the Canadian Pacific Railway Co.'s Irrigation Works at and near Calgary, Alt. (13) Aug. 8.
 A Large Concrete Pressure Pipe.* F. W. Hanna. (13) Aug. 8.
 Result of Filtration at Albany. (96) Aug. 8.
 Soft Ground Tunneling without Compressed Air on the Catskill Aqueduct.* Chester M. Gould. (14) Aug. 10.
 The Mississippi River Water Power at Keokuk, Iowa.* (18) Aug. 10.
 Damming the World's Greatest River; Harnessing the Mississippi for Two Hundred Thousand Horsepower.* H. S. Rogers. (19) Aug. 10.
 Pumping Well Water for Irrigation from a Central Station. (14) Aug. 10.
 Drainage of Irrigated Lands on the Minidoka Project, Idaho. Percival M. Fogg. (Abstract of paper read before the Idaho Soc. of Engrs.) (14) Aug. 10.
 A 63-In. Gate under 148-Ft. Head.* (13) Aug. 15.
 A Device for Locating Underground Pipes.* (13) Aug. 15.
 The Water Supply of Madras City, Proposed New Works.* J. W. Madeley. (104) Aug. 16.
 The Rapid Filter Plant at Albany, Oregon.* (14) Aug. 17.
 The Portneuf-Marsh Valley Irrigation Project in Southeastern Idaho.* (14) Aug. 17.
 A Water-Main Tunnel Under a Levee at East St. Louis.* (14) Aug. 17.
 Enlarging a New England Hydroelectric Project. (14) Aug. 17.
 Steam Turbine Driven Centrifugal Pumps at Evansville.* (14) Aug. 17.
 The Reservoirs of the Gloucester Water-Works at Witcombe. R. Read, Assoc. M. Inst. C. E. (Abstract of paper read before the Inst. of Water Engrs.) (66) Aug. 20.
 General Costs, Construction Plant and Methods Employed in Sinking a Dug Well 20 Feet in Diameter and 24 Feet Deep.* I. E. Jay. (86) Aug. 21.
 Some Methods of Measuring Irrigation Water Practiced by the U. S. Reclamation Service.* (86) Aug. 21.
 The Arrowrock Dam, Boise Project, U. S. Reclamation Service; The Highest Dam in the World.* (86) Aug. 21.
 Kutter and Bazin Formulas; Notes on the Coefficient of Roughness.* Ernest W. Schoder. (13) Aug. 22.
 Leakage Through the Expansion Joints of the Twin Peaks Reservoir, San Francisco, Calif.* (13) Aug. 22.
 The Cost of Leaks in Water-Works Systems.* Edward S. Cole. (13) Aug. 22.
 New Ozonising Plant at St. Petersburg.* (73) Aug. 23.
 Rapid Filtration Plant at Fort Worth; a 5 000 000-Gallon Water Purification Plant, Built in 90 Days, Having a New Type of Air-Wash System with Sewer Connection.* (14) Aug. 24.
 Calculation of the Keokuk Dam.* (14) Aug. 24.
 Seepage Through an Earth Dam. (14) Aug. 24.
 Breaks in Large Water Mains at Detroit; Two Reports Dealing with the Effects of Water Hammer. (14) Aug. 24.
 A Hydroelectric Plant for Construction Work.* (14) Aug. 24.
 Pennsylvania Water & Power Company: Hydro-Electric Generating Station on the Susquehanna River and Terminal Station at Baltimore, Md.* (27) Aug. 24.
 A Study of the Typhoid Fever Epidemic at Rockford, Illinois, Caused by a Contaminated Water Supply. Edwin O. Jordan and Ernest E. Irons. (86) Aug. 28.
 Notes on the Design and Operation of Mechanical Filtration Plants. F. B. Leopold. (Abstract of paper read before the Southwestern W. W. Assoc.) (86) Aug. 28.
 Improvements in Pittsburgh's Water-Supply System. (13) Aug. 29.
 Coefficients of Flow in Wachusett Aqueduct.* James A. Cushman. (13) Aug. 29.
 Measuring and Recording Devices for Irrigation Systems. W. G. Steward. (Paper read before the Conference of Operating Engineers for Irrigation Canal Systems Located in Idaho, Oregon and Washington.) (13) Aug. 29.
 The Cleaning of Water Mains. F. W. W. Doane. (Paper read before Union of Canadian Municipalities.) (96) Aug. 29.
 Failure of Supports to a Roof Water Tank.* Edward Godfrey. (13) Aug. 29.
 The Colorado River Siphon at Yuma, Arizona.* Francis L. Sellow. (13) Aug. 29.
 Water Power from the Au Sable River; a 9 000-Horse-Power Plant in Michigan that Transmits at 140 000 Volts.* (14) Aug. 31.
 Operating Results of Water Purification Plant at Columbus.* (14) Aug. 31.
 Water-Works of the Kansas Cities.* (64) Sept. 3.
 Note sur l'Appareil de Stérilisation de l'Eau par les Rayons Ultra-Violetes par la Compagnie du Chemin de Fer du Nord en Gare de Paris.* (38) Aug.
 Die Bewässerung der Konia-Ebene.* Gerhardt. (49) Vol. VII-IX, 1912.
 Das Pumpwerk V des Wasserwerkes der Stadt Düsseldorf.* A. Lenze. (48) May 4.
 Berechnung des Entnahmgebiets eines Brunnens.* Paul Kurgass. (39) July 20.

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Waterways

- The Upper St. Lawrence River; Its International History, Development of Navigation, and Future Possibilities. Henry Holgate. (5) Jan., 1911.
- Notes on the Regulation of the River Nile. A. W. Robinson. (5) Oct., 1911.
- The Flood Problem of Pittsburgh. Kenneth C. Grant, Assoc. M. Am. Soc. C. E. (12) Serial beginning July 26.
- The New French Lighthouse at Ushant.* (11) July 26.
- Creep in the Panama Canal.* Frank G. Carpenter. (45) Aug.
- Foundation Weaknesses in Mississippi Levees.* T. G. Dabney. (From Report of the Chief Engr. of the Yazoo-Mississippi Delta Levee Dist.) (13) Aug. 1.
- Construction of the Galveston Causeway; Details of the Building of the Steam and Electric Railway and Highway Connection from the Island to the Mainland.* (15) Aug. 2.
- A Method of Plotting River Stage-Discharge Data.* Ernest W. Schoder. (14) Aug. 3.
- The Miraflores Spillway of the Panama Canal.* Edward C. Sherman, M. Am. Soc. C. E. (14) Aug. 3.
- Turning the Black River Back into its Former Bed.* (14) Aug. 3.
- Flood on the Wisconsin River at and Near Wausau, Wis.* (13) Aug. 8.
- A Plan for Converting the Sahara Desert into a Sea.* G. A. Thompson. (46) Aug. 10.
- Relation of Tolls to the Volume of Traffic Through the Panama Canal. (86) Aug. 14.
- Progress at the Gatun Locks, Panama Canal.* (13) Aug. 15.
- The Cherry Creek Flood, Denver, Colo.* Charles W. Comstock. (13) Aug. 15.
- The Accident at Dam 26, Ohio River.* (14) Aug. 17 and 24; (13) Aug. 22.
- The Preservation of Reinforced Concrete in Sea Water. Edward Burr. (Abstract of report to Inter. Cong. on Nav.) (96) Aug. 22.
- Recent Flood in Louisiana.* (15) Aug. 23.
- Progress of Flood Protection at East St. Louis.* (14) Aug. 24.
- A Reinforced Concrete Pile Pier. (14) Aug. 24.
- The Harbors of the Pacific Coast; Terminal Facilities for the Panama Canal Trade.* Wm. Hosea Ballou. (46) Aug. 24.
- New Breakwater for Victoria, B. C.* (96) Aug. 29.
- Slides in the Culebra Cut at Panama: A Review of the Geological Conditions in the Canal Site Together with a Description of the Types of Slides and Their Causes.* (14) Aug. 31.
- Plans for a New Steamship Terminal in New York Harbor.* H. McL. Harding. (95) Sept.
- Description and Cost of Concrete Superstructures for Breakwaters at Harbor Beach, Mich.* E. J. Duffes. (100) Sept.
- Factors Affecting the Safe and Economical Operation of Boats in a Restricted Channel in the Hudson River. R. D. Black and W. P. Benjamin. (100) Sept.
- River and Harbor Notes from Foreign Lands.* F. B. Downing. (100) Sept.
- Portes Flottantes de l'Ecluse du Port de Commerce de Brême-Oslebshausen (Allemagne).* (33) July 20.
- Les Travaux du Port de Valence (Espagne): Construction des Nouvelles Digues.* (33) Aug. 10.
- Stau bei Flussbrüchen. A. Hofmann. (81) Vol. 4, 1912.
- Die Fahrtmessung mit dem hydrometrischen Flügel und die abgekürzte Fahrtmethode.* Th. Rümelin. (81) Vol. 4, 1912.
- Der neue Osthafen in Frankfurt a. M.* J. Elink Schuurman. (48) May 25.
- Die neuen Verlade- und Speichereinrichtungen der Holland-Amerika-Linie in Rotterdam.* (48) June 1.
- Künstliche Quellenspeisung. Sympher. (40) June 8.
- Erfahrungen bei Herstellung der Tondichtung in der Scheitelhaltung des Grossschiffahrtsweges Berlin-Stettin.* Haesler. (40) June 22.
- Die aufgelöste Bauweise der Staumauern im Vergleich zum dreieckförmigen Querschnitt. Wolf. (40) Aug. 3.

*Illustrated.